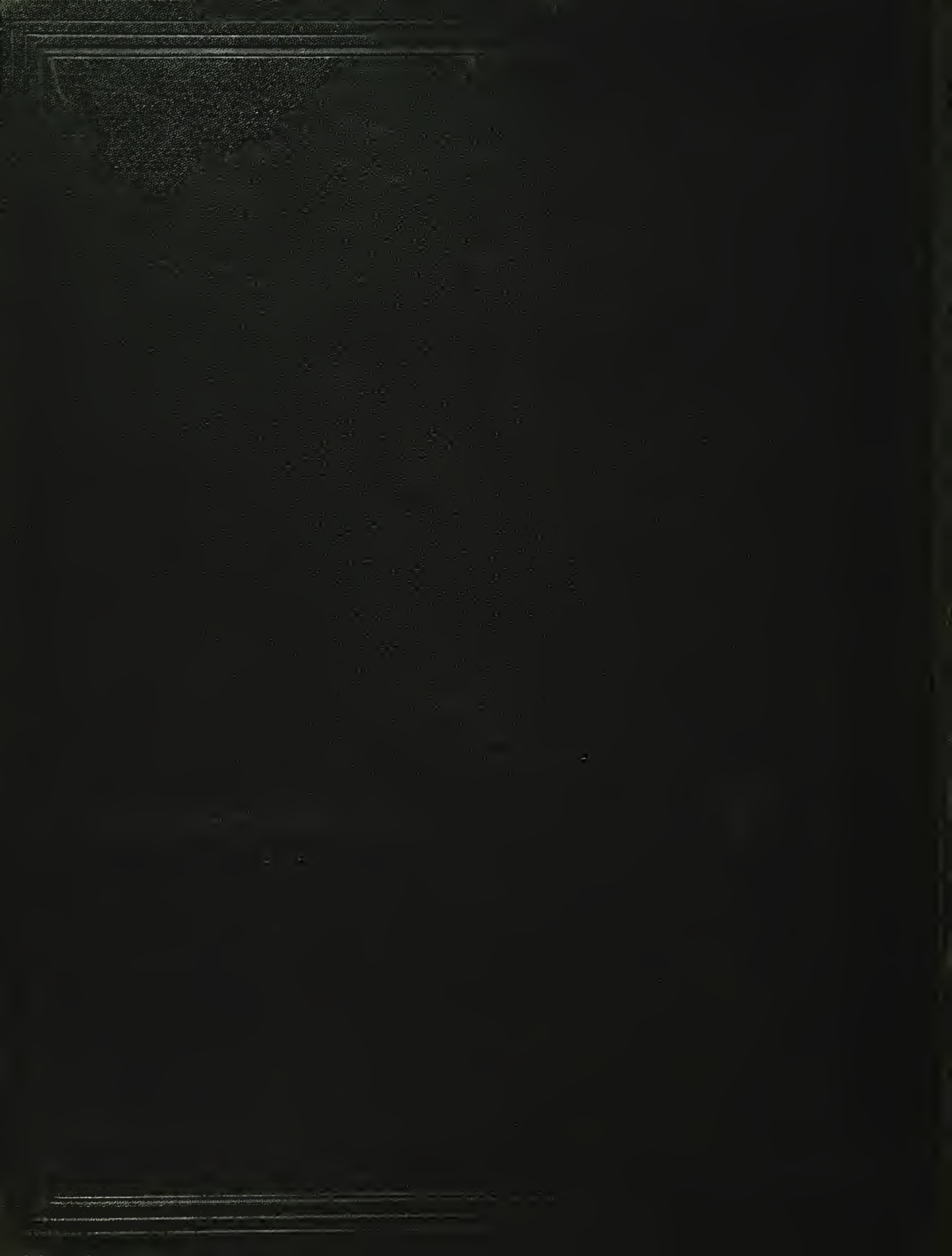


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DEPARTMENT OF THE INTERIOR,

CENSUS OFFICE.

ROBERT P. PORTER,
Superintendent.
Appointed April 20, 1889; resigned July 31, 1893.

CARROLL D. WRIGHT,
Commissioner of Labor in charge.
Appointed October 5, 1893.

REPORT

ON

MANUFACTURING INDUSTRIES

IN

THE UNITED STATES

AT THE

ELEVENTH CENSUS: 1890.

TEXTILES.

WASHINGTON, D. C.:
GOVERNMENT PRINTING OFFICE.
1894.

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LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., March 9, 1894.

SIR:

I have the honor to transmit herewith the text and statistical tables of a special report upon the textile industries of the United States, as returned at the Eleventh Census.

This report comprises, first, an analysis of the textile industries combined, by Mr. S. N. D. North, special agent; second, a report on the manufacture of wool, by Mr. North; third, a report on the manufacture of cotton, by Mr. Edward Stanwood, special agent; fourth, a report on the manufacture of silk, by Mr. Byron Rose, special agent; and, fifth, a report on dyeing and finishing textiles, by Mr. Peter T. Wood, special agent.

These reports present a body of statistics so closely related and so interdependent that it was deemed best to publish them together as a monograph, thus presenting a view of the textile industries of the country.

These reports were prepared by the special agents named, under the general direction of Mr. Frank R. Williams, special agent in charge of the division of manufactures.

I am, very respectfully,

CARROLL D. WRIGHT,
Commissioner of Labor, in charge.

The SECRETARY OF THE INTERIOR.

PRINCIPAL TEXTILE INDUSTRIES IN THE UNITED STATES.

BY S. N. D. NORTH.

The manufactures of wool, cotton, and silk are so closely allied to each other by general similarity of processes and machinery, and by the increasing interchangeable use of the fibers, that they may properly be regarded as constituting one general manufacture, to be considered not only separately, but also as a whole.

For the latter purpose tabulated statements containing the principal facts obtained at the Eleventh Census relating to these industries are herewith presented. Statements in detail for each principal branch of the industry will be found immediately following. For the purpose indicated it is necessary to include with the statistics of wool, cotton, and silk manufactures those of a closely allied industry, viz, the dyeing and finishing of textiles. The latter relates to the operations of independent dye works, bleacheries, and print works which are exclusively employed in finishing the products of woolen, cotton, and silk mills. The value of the product reported is simply the value added to the fabric by these final processes when conducted by distinct establishments. The other textile industries, the hemp, jute, and flax manufactures, and "mills employed in working raw cotton, waste, or cotton yarn into hose, webbing, tapes, fancy fabrics, mixed goods, or other fabrics, which are not sold as specific manufactures of cotton or wool", reported as "Special mills" in 1880, were treated at the census of 1890 with less particularity of detail upon the general manufacturing schedule, and the results will appear in the reports containing general statistics of manufactures under different heads, the most important of which are awnings, tents, and sails; baggings, flax, hemp, and jute; bags, other than paper; belting and hose, linen; belting and hose, rubber; carpets, rag; cordage and twine; cotton waste; gloves and mittens; hand knit goods; jute and jute goods; linen goods; rubber and elastic goods; thread, linen; upholstery materials.

As a preliminary exhibit of the growth of the textile industry of the United States, a table is first presented, covering the main statistics for a period of forty years as reported at the censuses of 1850, 1860, 1870, 1880, and 1890. This table shows the total number of establishments engaged in each of the textile manufactures and in dyeing and finishing, the amount of capital, number of employés, amount of wages, cost of materials, and value of manufactured products.

TABLE 1.—COMPARATIVE STATEMENT OF COMBINED TEXTILE INDUSTRIES IN THE UNITED STATES: 1850–1890.

INDUSTRIES.	Year.	Number of establishments.	Capital.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES		Cost of materials used.	Value of products.
				Employés.	Wages.		
Combined textiles	1850	3,025	$112,513,947	146,807	(a)	$76,715,959	$128,760,971
Wool manufacture (b)	1850	1,760	32,516,366	47,763	(a)	29,246,696	40,636,881
Cotton manufacture	1850	1,094	74,500,031	92,286	(a)	34,835,056	61,869,184
Silk manufacture	1850	67	678,300	1,743	(a)	1,093,860	1,809,476
Dyeing and finishing textiles	1850	104	4,818,350	5,105	(a)	11,540,347	15,454,430
Combined textiles	1860	3,027	150,080,852	194,082	$40,353,462	112,842,111	214,749,614
Wool manufacture (b)	1860	1,673	42,849,932	59,522	13,361,602	46,649,365	80,734,606
Cotton manufacture	1860	1,091	98,585,269	122,028	23,940,108	57,285,534	115,681,774
Silk manufacture	1860	139	2,926,980	5,435	1,050,224	3,901,777	6,607,771
Dyeing and finishing textiles	1860	124	5,718,671	7,097	2,001,528	5,005,435	11,716,463
Combined textiles	1870	4,790	297,694,243	274,942	86,565,191	353,249,102	520,386,764
Wool manufacture (b)	1870	3,456	132,382,319	119,850	40,357,235	134,154,615	217,668,826
Cotton manufacture	1870	956	140,706,291	135,369	39,044,132	111,736,936	177,489,739
Silk manufacture	1870	86	6,231,130	6,649	1,942,286	7,817,559	12,210,662
Dyeing and finishing textiles	1870	292	18,374,503	13,066	5,221,538	c99,539,902	c113,017,537

a This item was not fully reported at the census of 1850.
b Includes hosiery and knit goods.
c At the census of 1870 the value of the fabric itself was included, whereas at all subsequent censuses merely the values added to such fabrics by the processes of dyeing and finishing are given.

TABLE 1.—COMPARATIVE STATEMENT OF COMBINED TEXTILE INDUSTRIES IN THE UNITED STATES: 1850–1890—Cont'd.

INDUSTRIES.	Year.	Number of establishments.	Capital.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.		Cost of materials used.	Value of products.
				Employés.	Wages.		
Combined textiles	1880	4,018	$412,721,496	384,251	$105,050,666	$302,709,894	$532,673,488
Wool manufacture (a)	1880	2,689	159,091,869	161,557	47,389,087	164,371,551	267,252,913
Cotton manufacture (b)	1880	756	208,280,346	c174,659	42,040,510	102,206,347	192,090,110
Silk manufacture	1880	382	19,125,300	31,337	9,146,705	22,467,701	41,033,045
Dyeing and finishing textiles	1880	191	26,223,981	16,698	6,474,364	13,664,295	32,297,420
Combined textiles	1890	4,114	d739,973,661	511,897	175,547,343	421,398,196	721,949,262
Wool manufacture (a)	1890	2,489	296,494,481	219,132	76,660,742	203,095,572	337,768,524
Cotton manufacture	1890	905	354,020,843	221,585	69,489,272	154,912,979	267,981,724
Silk manufacture	1890	472	51,007,537	50,913	19,680,318	51,004,425	87,298,454
Dyeing and finishing textiles	1890	248	38,450,800	20,267	9,717,011	12,385,220	28,900,560

a Includes hosiery and knit goods.
b In addition to these data there were received at the census of 1880 returns for 249 mills classed as "Special mills", engaged in working raw cotton, waste, or cotton yarn into hosiery, webbing, tapes, and fancy fabrics, and mixed goods or other fabrics which are not sold as specific manufactures of cotton or wool. These 249 establishments reported $11,224,448 capital, 12,928 employés, $3,573,909 wages, $2,338,385 cost of cotton consumed, $18,860,273 value of products, and should be considered in making comparisons. In 1890 this class of mills is reported under a number of different heads, enumerated on page 3, although some of them may be included in the totals for the textile industries presented in this report.
c Includes 2,115 officers and clerks, whose salaries were not reported.
d Value of property hired is not included in the capital reported in 1890 because it was not included in the reports of previous census years.

While the incomplete character of earlier census inquiries renders their comparison with the more detailed results of later investigations somewhat misleading, still the general results shown in the foregoing table present a picture of wonderful development. Since 1850 the capital employed in the textile industry has increased nearly seven times, and the value of products nearly six times. The number of employés has increased from 146,897 to 511,897. The amount paid in wages was not fully reported in 1850, but the increase from 1860 has been nearly four and a half times.

VALUE OF PRODUCTS.

The development of the textile industry has been uninterrupted. The combined industry produced in 1890 goods valued at $721,949,262, the largest percentage of increase, as measured by the value of products, occurring during the decade 1860–1870. But in order to correctly obtain the statistical measure of this growth, account must be taken of the fact that the value of product reported in 1870 was a currency value at a time when the paper dollar averaged 79.81 cents in gold, and the prices of all raw materials were correspondingly high. In making comparisons with the data for the census of 1870 this fact must be remembered, and all values reported at that census reduced to a gold basis. Another fact having a like bearing upon the true measure of growth is the steady decline in the market value of products which has been in progress since the census of 1870 was taken. This decline has been accelerated in each branch of textile manufacture by remarkable improvements and advances in labor saving machinery—improvements which partially equalize the advance in wages which has taken place. These mechanical improvements have not radically changed the principles of mechanism employed in the United States during the last thirty years, but they have greatly simplified and expedited processes, and reduced the labor required to produce a given amount of product. The percentages of increase in number of employés and value of products, after reducing to a gold basis the currency value reported for 1870, are as follows:

PERCENTAGES OF INCREASE IN AVERAGE NUMBER OF EMPLOYÉS AND VALUE OF PRODUCTS.

PERIODS.	Employés.	Products.
1850 to 1890	248.47	460.65
1850 to 1860	32.12	60.76
1860 to 1870	41.66	93.41
1870 to 1880	39.70	28.26
1880 to 1890	33.22	35.53

The differences between the percentages of increase in the value of products and in the number of employés indicate in a measure the increase in efficiency of machinery, although many different elements affect both percentages.

THE GROWTH BETWEEN 1880 AND 1890.

The statistics relating to the years 1880 and 1890 contained in the preceding tables are shown in Table 2 in direct comparison by totals for each state, and for geographical groups of states.

TABLE 2.—COMPARATIVE STATEMENT OF COMBINED TEXTILE INDUSTRIES IN THE UNITED STATES, BY GEOGRAPHICAL DIVISIONS AND STATES AND TERRITORIES: 1890 AND 1880.

STATES AND TERRITORIES.	Year.	Number of establishments.	Capital. (a)	Miscellaneous expenses. (b)	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.		Cost of materials used.	Value of products.
					Employés.	Wages.		
United states	1890	4,114	$739,973,661	$43,356,736	511,897	$175,547,343	$421,398,196	$721,949,262
	1880	4,018	412,721,496	.....	c384,251	105,050,666	302,709,894	532,673,488
New England states	1890	1,210	426,365,388	24,501,029	259,542	91,888,951	211,974,959	365,613,324
	1880	1,214	261,561,147	.....	217,674	60,611,202	172,223,778	310,542,352
Maine	1890	107	30,990,097	1,867,550	20,011	6,579,880	14,495,290	24,911,165
	1880	126	19,932,406	.....	15,869	4,204,778	12,148,526	21,470,567
New Hampshire	1890	118	43,891,412	2,339,287	29,573	10,044,132	22,225,159	37,256,364
	1880	126	31,247,024	.....	24,743	6,904,069	18,809,037	32,757,353
Vermont	1890	45	5,491,250	301,466	3,040	1,116,026	2,626,232	4,744,326
	1880	58	3,750,257	.....	3,204	807,948	2,881,935	4,671,041
Massachusetts	1890	533	215,254,813	12,930,047	126,819	45,590,207	107,465,624	184,938,074
	1880	496	120,443,376	.....	106,743	29,801,616	84,228,717	152,988,522
Rhode Island	1890	204	70,699,470	4,260,785	48,071	16,835,284	37,911,493	67,005,615
	1880	194	46,989,447	.....	36,622	10,127,287	27,708,649	51,383,569
Connecticut	1890	203	60,038,346	2,801,894	32,028	11,723,422	27,251,161	46,757,780
	1880	214	39,198,637	.....	30,493	8,766,404	26,446,914	47,271,300
Middle states	1890	1,914	222,402,855	14,352,458	185,136	67,512,602	161,124,539	279,576,396
	1880	1,540	115,483,359	.....	132,884	38,013,381	106,328,536	183,443,725
New York	1890	615	75,881,672	4,840,584	62,383	22,663,753	47,621,495	86,171,293
	1880	480	42,022,987	.....	45,153	12,652,423	30,610,901	56,191,417
New Jersey	1890	240	43,321,016	2,952,104	34,712	13,704,395	29,682,210	52,831,023
	1880	186	16,028,770	.....	24,111	7,652,833	17,456,679	31,865,348
Pennsylvania	1890	1,010	92,686,227	6,052,430	81,381	29,236,630	78,869,158	132,367,499
	1880	822	51,238,747	.....	58,005	16,560,274	53,999,549	88,594,143
Delaware	1890	11	2,555,233	122,690	1,543	546,117	1,097,270	1,821,278
	1880	13	1,227,129	.....	1,058	301,231	975,490	1,536,260
Marylaud (d)	1890	38	7,958,707	384,650	5,117	1,361,707	3,944,406	6,385,303
	1880	39	4,965,726	.....	4,557	846,620	3,285,917	5,256,557
Southern states	1890	486	62,623,729	2,691,426	44,768	9,771,056	32,624,416	49,729,674
	1880	613	20,413,414	.....	19,409	3,254,936	12,781,692	20,381,689
Virginia	1890	47	4,089,511	177,750	2,950	628,159	1,998,555	2,964,171
	1880	56	1,646,850	.....	1,477	241,509	1,023,471	1,618,930
North Carolina	1890	124	11,195,122	442,056	9,276	1,747,729	6,553,635	10,053,264
	1880	98	3,058,990	.....	3,528	462,854	1,719,352	2,857,642
South Carolina	1890	35	11,144,233	528,236	8,193	1,646,689	6,820,132	9,801,956
	1880	25	2,784,000	.....	2,066	382,017	1,827,755	2,919,844
Georgia	1890	71	18,084,708	746,314	11,058	2,470,438	7,998,926	12,375,724
	1880	73	6,532,390	.....	6,496	1,161,654	4,185,462	6,724,784
Florida	c1890	.....	.....	.....	.....	.....	.....	.....
	1880	1	11,000	.....	33	5,000	18,095	25,000
Alabama	1890	22	2,965,713	158,734	2,565	515,136	1,573,938	2,398,646
	1880	30	1,275,400	.....	1,508	243,035	833,072	1,291,764
Mississippi	1890	16	3,607,198	75,676	2,266	597,251	1,380,009	2,257,583
	1880	16	1,453,649	.....	940	186,314	548,795	978,698
Louisiana	1890	6	1,516,660	15,650	1,253	290,042	737,212	1,126,751
	1880	2	195,000	.....	108	12,572	72,470	86,776
West Virginia	1890	33	408,881	27,708	328	79,380	225,961	395,700
	1880	57	328,170	.....	365	51,361	290,343	413,586
Kentucky	1890	49	4,142,815	246,643	2,876	804,094	2,300,959	3,785,436
	1880	103	1,255,750	.....	1,181	231,755	1,107,523	1,689,694
Tennessee	1890	69	4,322,336	230,116	3,172	735,095	2,525,198	3,724,138
	1880	122	1,564,264	.....	1,446	228,134	976,815	1,495,441
Arkansas	1890	8	164,236	8,775	115	21,106	46,557	71,913
	1880	27	160,550	.....	154	20,565	119,277	177,430
Texas	e1890	.....	.....	.....	.....	.....	.....	.....
	1880	3	147,500	.....	107	28,166	59,262	102,100
All other southern states (e)	1890	6	982,316	33,762	716	235,937	463,334	774,392

a Value of hired property is not included in the capital reported in 1890, because it was not included in the report of 1880.

b This item was not reported at the census of 1880.

c Includes 2,115 officers and clerks engaged in cotton manufacture whose salaries were not reported.

d Maryland is classed as a middle state for purposes of comparison.

e Includes states grouped in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Florida, 1; Texas, 5.

TABLE 2.—COMPARATIVE STATEMENT OF COMBINED TEXTILE INDUSTRIES IN THE UNITED STATES, BY GEOGRAPHICAL DIVISIONS AND STATES AND TERRITORIES: 1890 AND 1880—Continued.

STATES AND TERRITORIES.	Year.	Number of establishments.	Capital.	Miscellaneous expenses.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.		Cost of materials used.	Value of products.
					Employés.	Wages.		
Western states	1890	504	$28,581,689	$1,811,829	22,451	$6,374,734	$15,674,282	$27,029,868
	1880	651	15,263,576	.....	14,284	3,171,147	11,375,888	18,305,722
Ohio	1890	125	4,820,526	314,894	3,970	1,130,518	3,233,787	5,437,483
	1880	163	2,323,340	.....	2,839	511,923	1,780,099	3,032,669
Indiana	1890	61	5,431,065	379,881	4,434	1,150,063	3,208,276	5,214,211
	1880	95	3,413,105	.....	2,784	662,310	2,587,954	4,074,576
Illinois	1890	75	4,119,495	234,455	4,072	1,315,335	2,429,564	4,666,115
	1880	85	1,825,203	.....	2,337	555,209	1,937,336	2,980,116
Michigan	1890	44	1,691,461	119,060	1,635	430,996	1,110,018	1,964,974
	1880	51	726,189	.....	1,397	185,364	624,241	928,766
Wisconsin	1890	60	4,603,613	279,328	3,884	952,933	2,399,217	4,100,201
	1880	53	1,559,964	.....	1,146	285,566	1,096,474	1,827,275
Minnesota	1890	25	815,144	70,917	475	170,703	398,300	730,458
	1880	15	203,500	.....	263	55,327	190,867	303,378
Iowa	1890	20	896,741	53,069	539	181,640	629,832	899,918
	1880	37	555,700	.....	505	118,252	437,301	682,812
Missouri (a)	1890	45	896,020	38,608	804	204,267	452,068	798,736
	1880	109	1,665,550	.....	1,350	235,107	1,105,497	1,563,641
Kansas	b1890	.....	.....	.....	.....	.....	.....	.....
	1880	6	141,425	.....	126	26,075	107,401	212,065
Utah	1890	14	612,579	20,301	344	121,176	189,339	392,094
	1880	12	402,000	.....	306	70,208	150,698	287,351
Washington	b1890	.....	.....	.....	.....	.....	.....	.....
	1880	1	40,000	.....	29	4,000	52,000	70,000
Oregon	1890	6	1,350,585	86,906	402	175,313	327,502	614,932
	1880	10	566,800	.....	216	86,088	227,486	549,030
California	1890	20	3,235,263	199,373	1,794	516,590	1,238,067	2,080,215
	1880	14	1,840,800	.....	986	375,718	1,078,534	1,794,033
All other western states (b)	1890	9	109,197	6,037	98	25,200	58,312	130,531

a Missouri is classed as a western state for the purpose of comparison.

b Includes states having less than 3 establishments in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Colorado, 2; Idaho, 1; Kansas, 2; Nebraska, 1; South Dakota, 2; Washington, 1.

The foregoing table brings out in strong light the concentration of the textile interests in the New England and middle states, where were produced in 1890 $645,189,720, or 89.37 per cent of the total value of textile products in the United States, being an increase of 30.61 per cent over the production of these states in 1880. The New England states alone produced 50.64 per cent of the total product of the United States, an increase of 17.73 per cent over the value of their textile products in 1880. The middle states produced 38.73 per cent of the total product, an increase of 52.40 per cent over 1880. The increase in the textile products of the states included in the southern group has been more marked than in those included in the western, due to the notable increase in cotton manufacture. The southern states produced textiles to the value of $49,729,674 in 1890, being 6.89 per cent of the total value of textiles, an increase of 143.99 per cent over the value of their production in 1880. This increase is almost entirely in the manufacture of cotton, as the product of the wool, hosiery, silk, and dyeing and finishing industries in the south reported at the census of 1890 amounted only to $8,215,963.

The product of the textile industry for the western states, as reported at the census of 1890, is but $27,029,868 or 3.74 per cent of the total product of the country, though an increase of 47.66 per cent over the value of the product of the western states in 1880. This increase was chiefly in the manufacture of woolen and hosiery and knit goods, the product of other textile industries in the western states having a total value of $8,053,696 in 1890.

The state of Massachusetts is still the leading textile manufacturing state of the Union, manufacturing in 1890 a product valued at $184,938,074, of which $100,202,882 or 54.18 per cent was the value of cotton goods. The value of Massachusetts textile products in 1890 was 25.62 per cent of the production of the entire country, the gain during the decade being 20.88 per cent.

Pennsylvania ranks second as a textile producing state, manufacturing goods to the value of $132,367,499 in 1890, which is 18.33 per cent of the total product of the country, and an increase of 49.41 per cent over her product of 1880.

The northern state which shows the largest percentage of increase in product during the decade is New Jersey, where an increase of 65.79 per cent is shown. After New Jersey, New York shows the largest percentage of increase, 53.35, followed by Pennsylvania with 49.41 and Rhode Island with 30.40 per cent.

Of the southern group, the state of Georgia ranks first in total value of product, with an increase of 84.03 per cent, followed by North Carolina with an increase of 251.80 per cent, South Carolina with an increase of 235.70 per cent, and Kentucky with an increase of 124.03 per cent. As previously stated, the great increase in this section is due principally to the development of the cotton industry during the past decade.

It is to be noted that the states in which any single branch of the textile industry is successful are those in which each of the others chiefly flourish. The development of the cotton manufacture in the south is the only conspicuous exception to this rule. The rule may be tested by observing that the limited number of states in which the silk manufacture has a large development are states in which the cotton and wool manufactures are increasingly and successfully carried on. Nevertheless the tendency to localization, which is strong in each textile industry, has resulted in making four cities in different states the chief localities in which each industry is carried on: Philadelphia, Pa., in the wool manufacture; Fall River, Mass., in the cotton manufacture; Paterson, N. J., in the silk manufacture, and Cohoes, N. Y., in the hosiery and knit goods manufacture.

Table 3 presents the percentages of increase in the combined industries, as shown by the census reports of 1880 and 1890. The more thorough method employed at the current census may have in a measure affected the increase shown in some of the items, especially that of capital.

TABLE 3.—COMPARATIVE STATEMENT AND PERCENTAGE OF INCREASE FOR TEXTILE INDUSTRIES: 1890 AND 1880.

GENERAL HEADS.	1890	1880	Percentage of increase.
Number of establishments	4,144	4,018	2.39
Capital (*a*)	$739,073,661	$412,721,496	79.29
Miscellaneous expenses	$43,356,736	(*b*)	.....
Average number of employés	511,897	*c*384,251	33.22
Total wages	$172,082,609	$105,050,666	63.81
Cost of materials used	$421,398,196	$302,709,894	39.21
Value of products	$721,949,262	$532,073,488	35.53

a Value of hired property is not included in the capital reported in 1890, because it was not included in the report of 1880.

b This item was not reported at the census of 1880.

c Includes 2,115 officers and clerks engaged in cotton manufacture whose salaries were not reported. Therefore, in computing the percentage of increase in wages, the amount, $3,464,734, paid these classes in the cotton industry in 1890 is not included.

In the value of their products the wool and cotton manufactures rank very closely. At the census of 1890 the value of the product of the wool manufacture is shown to be $337,768,524, and of cotton manufacture as $267,981,724, but all cotton knit goods and hosiery are included with the former, as well as cotton goods manufactured in woolen mills. If it were possible to make an exact classification of the products along the line of the predominating fiber, we should find the value of the products of these two industries about the same. Moreover, mixed textiles, so called, made of wool and cotton, are all enumerated with the wool manufacture in accordance with the rule which classifies them with the products of the fiber predominating in value. In all the following comparisons between the two industries the statistics of hosiery and knit goods manufacture are omitted from the totals of wool manufacture for the reason above given.

Up to 1870 the value of the cotton manufactures greatly exceeded that of wool manufactures, as shown by the following table:

TABLE 4.—COMPARATIVE VALUE OF TEXTILE PRODUCTS FROM 1800 TO 1890.

YEARS.	Wool.	Cotton.	Silk.
1800	.....	$170,000	.....
1810	.....	3,240,000	.....
1820	$4,413,068	25,000,000	.....
1830	14,528,166	27,000,000	.....
1840	20,696,999	46,350,453	.....
1850	48,608,779	61,869,184	$1,809,476
1860	73,454,000	115,681,774	6,607,771
1870	199,257,262	177,489,739	12,210,662
1880	238,085,686	192,090,110	41,033,045
1890	270,527,511	267,981,724	87,298,454

In the foregoing table the estimates of the special agents on the cotton and wool manufactures, for the value of product at the census years prior to 1840, are used in the absence of complete official data for those years.

The reversal of relations in the value of the products of the wool and cotton manufactures which occurred between 1860 and 1870 was the direct result of conditions created by the war, as the cotton famine, the demand for woolen goods for the army, and the large development of the domestic wool clip. In the interval since 1860 the fall in the value of wool has been much greater relatively than the fall in the value of cotton, and this factor has had a great influence in bringing the relative values of the manufactured product nearer together.

COMPARATIVE CONSUMPTION OF FIBERS.

The relative value of products is not a true measure of the consumption, which can only be judged by the quantity of raw material used in the mills. The volume of cotton products entering into popular consumption is much the greater. This is shown by the following comparative table, which gives the annual consumption in quantities of raw cotton and wool, and so far as possible for silk by decades for fifty years.

TABLE 5.—COMPARATIVE STATEMENT OF CONSUMPTION OF TEXTILE FIBERS: 1840–1890.

YEARS.	Wool.	Cotton.	Silk.
	Pounds.	*Pounds.*	*Pounds.*
1840	.....	126,000,000	.....
1850	70,862,829	288,558,000	.....
1860	95,452,159	422,704,975	462,965
1870	214,373,219	398,308,257	684,488
1880	287,597,334	750,343,981	2,690,482
1890	351,158,020	1,117,945,776	6,376,881

If to the cotton consumed in 1890, as given above, we add the 75,428,865 pounds of cotton consumed by the woolen industry, including hosiery and knitting mills, and to the wool consumed we add the 21,639,393 pounds of wool consumed in hosiery and knitting mills, we have a total of 1,193,374,641 pounds of cotton used by domestic manufactures in the census year, as compared with a total of 372,797,413 pounds of wool, or 3.20 pounds of cotton to each pound of wool. A large quantity of hair and shoddy is consumed in wool manufacture, and the quantity of wool consumed is reported "in condition purchased" with an average shrinkage of 50 per cent. while the cotton consumed shrinks but little beyond the wastage.

NUMBER OF ESTABLISHMENTS.

The smallest percentage of increase shown in Table 3 is in the number of establishments reporting. This column strikingly illustrates the tendency apparent in the textile industries toward the concentration of manufacture in large establishments. This tendency is chiefly between 1880 and 1890 in the wool manufacture, where the number of establishments reporting in 1890 is less than in 1880. The special reasons for this are fully set forth in the report on wool manufactures. The remaining branches of the textiles each show a substantial increase in the number of establishments, but the percentage of gain is much smaller in this particular than in the other items. Neither the cotton nor the silk statistics have ever been complicated by statistics of the household industry in the manner that is still true of the woolen manufacture; but a reference to Table 1 shows that the number of establishments now engaged in manufacturing cotton is smaller than in 1850–1860, although their spindle capacity is now nearly four times as great as in 1850. The number of silk mills, on the other hand, has steadily increased, except for the decade ending in 1870.

The widest contrasts are presented by the organization of the cotton and wool industries. The cotton manufacture, conducted as a rule under the corporate method, is carried on in large mills, comparatively few in number, the 905 establishments reported at 1890 manufacturing a product nearly equal in value to the product of the 1,693 wool manufacturing establishments. There are comparatively few very large mills engaged in manufacturing wool fabrics.

CAPITAL.

The figures given under the head of capital must be used with caution, as the method of reporting this item has varied with every census, and has never before resulted in a return so complete and comprehensive as that presented for 1890. With this caution, we present a table showing the capital in each of the textile industries for each decade since 1840.

TABLE 6.—CAPITAL IN THE TEXTILE INDUSTRIES FROM 1840 TO 1890.

YEARS.	Wool.	Hosiery and knit goods.	Cotton.	Silk.
1840	$15,765,124	(*a*)	$51,102,359	.....
1850	31,971,631	$544,735	74,500,931	$678,300
1860	38,814,422	4,035,510	98,585,269	2,926,980
1870	121,451,059	10,931,260	140,706,291	6,231,130
1880	143,512,278	15,579,591	208,280,346	19,125,300
1890 (*b*)	245,886,743	50,607,738	354,020,843	51,007,537

a Not separately reported.

b Value of hired property is not included in the capital reported in 1890, because it was not included in the reports of previous census years.

The relationship between capital and the value of the product varies in accordance with the character of the material used. The silk manufacture, utilizing the most costly and delicate of the fibers, produces much the largest value of product relatively with the amount of capital, and after silk the wool manufacture. The product of the latter is valued at $24,640,768 in excess of the capital utilized, while the capital in the cotton manufacture is $86,039,119 in excess of the value of the product. This general relationship between capital and product in each of the textile industries has existed since 1850, as shown by Table 1, although the given amount of capital in each industry produced a much larger product relatively in the earlier decades than at present.

RELATIONSHIP BETWEEN MATERIALS AND PRODUCT.

The relationship between the cost of materials and the value of the product exhibits a striking uniformity in all the textile industries. This is shown by the following table, which gives the cost of materials in $100 of product for 1890 in each industry:

TABLE 7.—COST OF MATERIALS USED AND VALUE OF PRODUCTS.

INDUSTRIES.	Cost of materials used.	Value of products.	Cost of materials in $100 of product.
Wool	$167,233,987	$270,527,511	$61.82
Hosiery and knit goods	35,861,585	67,241,013	53.33
Cotton	154,912,979	267,981,724	57.81
Silk	51,004,425	87,298,454	58.43

COMPARISON OF EMPLOYÉS AND WAGES.

Table 8 presents the average number of employés and amount of wages in each branch of the textile industry, together with the total wages and the average annual earnings of males, females, and children, for each class in 1890.

TABLE 8.—AVERAGE NUMBER OF EMPLOYÉS, TOTAL WAGES, AND AVERAGE ANNUAL EARNINGS FOR THE UNITED STATES: 1890.

INDUSTRIES	AGGREGATES.			OFFICERS, FIRM MEMBERS, AND CLERKS.					
				Males above 16 years.			Females above 15 years.		
	Average number.	Total wages.	Average annual earnings per employé.	Average number.	Total wages.	Average annual earnings per employé.	Average number.	Total wages.	Average annual earnings per employé.
Combined textiles	511,897	$175,547,343	$342.93	9,709	$11,724,072	$1,207.55	470	$206,678	$439.74
Wool	157,923	58,397,470	369.78	3,530	4,011,337	1,136.36	122	46,358	379.98
Hosiery and knit goods	61,269	18,263,272	298.38	1,520	1,641,230	1,079.76	101	43,923	434.88
Cotton	221,585	69,489,272	313.60	2,627	3,427,362	1,304.67	82	37,372	455.76
Silk	50,913	19,680,318	386.55	1,396	1,852,235	1,326.82	135	65,642	486.24
Dyeing and finishing	20,267	9,717,011	479.45	636	791,908	1,245.14	30	13,383	446.10

INDUSTRIES.	ALL OTHER EMPLOYÉS.								
	Males above 16 years.			Females above 15 years.			Children.		
	Average number.	Total wages.	Average annual earnings per employé.	Average number.	Total wages.	Average annual earnings per employé.	Average number.	Total wages.	Average annual earnings per employé.
Combined textiles	216,345	$91,038,323	$420.80	243,589	$66,644,785	$273.60	41,784	$5,933,485	$142.00
Wool	78,550	33,702,231	429.05	64,944	18,883,174	290.76	10,777	1,754,370	162.79
Hosiery and knit goods	14,846	6,041,200	406.92	40,826	10,006,070	245.09	3,916	530,849	135.56
Cotton	88,837	33,797,517	380.44	106,607	29,165,086	273.58	23,432	3,061,935	130.67
Silk	17,602	9,349,531	531.16	28,914	7,970,065	275.65	2,866	442,845	154.52
Dyeing and finishing	16,510	8,147,844	493.51	2,298	620,390	269.97	793	143,486	180.94

The amount paid in wages to all classes of employés in the combined textile industries has increased 63.81 per cent since 1880. In making this calculation the amount paid officers and clerks in cotton mills is not included in the total amount of wages for 1890, as it was not reported at the census of 1880. The largest increase occurred in the hosiery and knit goods industry where it was shown to be 172.53 per cent. Silk follows, with an increase of 115.16 per cent; then cotton, with an increase of 57.05 per cent; dyeing and finishing, with an increase of 50.08 per cent, and finally wool, with an increase of 43.53 per cent. The increase in wages and average annual earnings for each employé, as in other items, may be due in part to the change in the form of inquiry and the more perfect enumeration at the census of 1890. The large decrease in the number of children employed also has considerable bearing on the increase in the average annual earnings.

The average annual earnings for all classes of employés differ widely in the several industries. For the division of the average annual earnings between men, women, and children, and the manner in which the average is affected by the relative number of each class and the time employed, reference is made to the tables presenting the data in detail for wool, cotton, and silk manufacture.

The cotton manufacture employs the largest number of operatives, but the wool manufacture employs the largest proportion of men. The following table shows the number of men, women, and children, and their relative proportion in each industry for 1880 and 1890:

TABLE 9.—AVERAGE NUMBER OF MALES, FEMALES, AND CHILDREN IN EACH INDUSTRY, WITH THE PERCENTAGE THAT EACH IS OF THE TOTAL NUMBER OF EMPLOYÉS: 1880 AND 1890.

INDUSTRIES.	MALES ABOVE 16 YEARS.				FEMALES ABOVE 15 YEARS.				CHILDREN.			
	1880		1890		1880		1890		1880		1890	
	Average number.	Percentage.	Average number.	Percentage.	Average number.	Percentage.	Average number.	Percentage.	Average number.	Percentage.	Average number.	Percentage.
Combined textiles	159,382	41.48	226,054	44.16	169,806	44.19	244,059	47.68	55,063	14.33	41,784	8.16
Wool	67,942	51.21	82,080	51.98	49,107	37.01	65,066	41.20	15,623	11.78	10,777	6.82
Hosiery and knit goods	7,517	26.02	16,366	26.74	17,707	61.30	40,927	66.86	3,661	12.68	3,916	6.40
Cotton	61,760	35.36	91,464	41.28	84,558	48.41	106,689	48.15	28,341	16.23	23,432	10.57
Silk	9,375	29.92	18,998	37.31	16,396	52.32	29,049	57.06	5,566	17.76	2,866	5.63
Dyeing and finishing textiles	12,788	76.58	17,146	84.60	2,038	12.21	2,328	11.49	1,872	11.21	793	3.91

It is evident from the tables here presented that the textile industries have flourished in keeping with the general prosperity of the country. The natural aptitude of our people fits them for equal success in any of these industries, and climatic conditions are, on the whole, as favorable here as elsewhere. In every branch of textiles our national contributions to the development and perfecting of the special machinery employed in the manufacture have been of the utmost importance.

The manufacture of linen has never been largely carried on in the United States, although we have several large mills which have been successfully operated for many years. This is explained by the inferior character of our domestic flax as compared with that of Belgium and Ireland, by the excessive amount of care and labor required in the preparation of the fiber for spinning, and by the comparatively limited market for linen goods, which diminishes the inducement to enter into competition with countries where the manufacture of these goods has been made a specialty for generations, and in which it has reached a high degree of excellence.

Contrasting the general conditions of the textile industries of this country with its conditions elsewhere, one is impressed with the great diversification which attends it here and with the remarkable manner in which it adapts its products to the daily needs of our own people. Manufacturing almost wholly for domestic consumption, the aim in all lines has been to anticipate and meet the average wants of the home community. This tendency has resulted in the development of the manufacture of the cheaper and coarser fabrics of all fibers, and a comparatively small advance in the higher and more expensive products. There are notable exceptions to this rule in every branch, particularly carpets; and the one characteristic of the progress of the last decade, which distinguishes it beyond the limits of statistical comparison from the progress of any previous decade, has been the advance made into the higher forms of the textile arts. This advance has occurred in all branches, and is dwelt upon in detail in the special reports which follow.

WOOL MANUFACTURE.

BY S. N. D. NORTH.

The Eleventh Census completes the statistical record of the first century of woolen manufacture in the United States by the factory system, as now understood and developed. The statistical history of the industry for the first half of the century is meager and desultory. For the fifty years last past, it has been presented by the several censuses with a detail which makes it possible to accompany the present report with a comparative summary of all the statistical data regarding American wool manufacture and the hosiery and knit goods manufacture which have appeared in the federal censuses since 1840. The data presented in census records prior to 1840 are so fragmentary that it is impossible to reduce them to tabular form in harmony with the later statistics. The preparation of the tables for the fifty years they cover has been accompanied by many difficulties, owing to the different methods of grouping adopted and the conflicting character of the figures that are published. To illustrate these difficulties, it may be stated that at times the hosiery and knit goods manufacture has been counted as a part of the wool manufacture, and at other times it has been separately enumerated, and not subsequently incorporated. Carding mills are partially included in the census of 1870 and subsequently, but not always prior to that date. The utmost pains have been taken in constructing these tables to bring together all the figures that properly belong in them. The figures for woolen goods, worsted goods, carpets, felts, wool hats, and hosiery and knit goods are combined, whenever obtainable. Where deficiencies exist which can not be supplied attention is called to them in the footnotes attached.

The chief difficulty in the compilation of the scattered returns contained in previous censuses has arisen from the failure to include the statistics of hosiery and knit goods manufacture. The increasing use of cotton in this industry furnishes a reason why it should be separately treated, as in this table; but the total wool consumption can only be correctly stated by including these statistics with those of the other branches of the industry. While the quantity of cotton consumed in this industry now vastly exceeds that of wool, yet the value of the wool remains the greatest, justifying the classification of the census. In all the references of this report, therefore, the statistics of hosiery and knit goods are included.

The confusion that has existed, in consequence of the failure of previous census reports to properly group all these figures, has led to many errors in attempts to measure the statistical growth of the American wool manufacture on the basis of census figures, errors due to the omission, in one year or another, of one or another of the separate groups of figures essential to a complete comparison.

The rate of progress for the decade covered by the Eleventh Census has not been as rapid as that which marked several of the previous decades covered by Tables 1 and 2, but it has been healthy and steady, as is shown by the following comparative table:

GENERAL HEADS.	1890	1880	Percentage of increase.
Number of establishments	*a* 2,489	2,689	*b* 7.44
Capital	*a* $296,494,481	$159,091,869	*c* 86.37
Miscellaneous expenses	$19,249,508	(*d*)	
Average number of employés	219,132	161,557	35.64
Total wages	$76,660,742	$47,389,087	61.77
Cost of materials used	$203,095,572	$164,371,551	23.56
Value of products	$337,768,524	$267,252,913	26.39

a Not including 267 idle establishments reporting invested capital amounting to $6,100,860. Does not include the value of "Hired property."

b Decrease.

c The great increase shown in the amount of capital employed as between 1890 and 1880 is more apparent than real, and is largely due to the fact that the capital returned for the census of 1880 did not take cognizance of all items which properly go to make up "live assets", and which, it is believed, are for the first time fully included in the census of 1890.

d This item was not reported at the census of 1880.

In this comparison we must bear in mind the fact that the year 1879–1880, in which the prior census was taken, was a year of unusual and at times even speculative activity in the wool manufacture, and it is commercially

recognized as the most prosperous year the industry has encountered since the war. On the other hand, the year 1889–1890 was a comparatively dull year in the wool manufacture, in which a considerable portion of the machinery of active mills was idle during a part or the whole of the year.

Another fact to be considered in making the comparison is the large reduction in the market value of the goods covered by this report. Probably no previous decade witnessed so general a downward movement in prices. The value of products now given indicates a much greater quantity of production than the same value in 1880 or in any previous year would have signified. Something of the measure of this decline in value of products is indicated by the fall in the cost of raw materials. The whole subject is discussed in another portion of this report.

No statement relating to mixed textiles will be made in the reports of the Eleventh Census similar to that embodied in Table VII, page 465, volume 2, of the Census of 1880. To avoid a possible misapprehension, it is necessary to state that a careful examination of the original data from which these statistics of "mixed textiles" were compiled for the Tenth Census, shows that so far as these products consisted of goods composed of wool and cotton, with wool the component material of chief value, they were a duplication of products already reported and accounted for in the statistics of the wool manufacture proper. For this reason no cognizance is to be taken of the products reported as "mixed textiles" in a comparison of the statistics of wool manufacture of the two census periods.

CONNECTICUT.

The reported value of the products of the wool manufacture of the state of Connecticut, as shown in Tables 1 and 2, less by $4,011,764 than that reported in 1880, notwithstanding an increase in the machinery capacity of the state. The suspicion of inaccuracy excited by this fact led the special agent to make a careful comparison of his returns with those received by the Connecticut state bureau of statistics of labor. The comparison showed that the returns from the mills reporting to the state bureau were substantially the same as those made to the Census Office, thus confirming in a striking manner the accuracy of both. The decrease is partly due to the substitution of fur for wool in the hat manufacture, thus excluding the statistics of several mills from this report; but it also extends to the manufacture of woolen and worsted goods. An examination of individual returns made in 1880 leads the special agent to believe that the value of the products of Connecticut was exaggerated ten years ago.

MANUFACTURING IN PUBLIC INSTITUTIONS.

Various branches of the wool manufacture are carried on in the public, penal, and eleemosynary institutions of 9 states, all data of which are omitted from these tables. This manufacture consumed 76,300 pounds of wool and 210,000 pounds of cotton; but most of its products were made from purchased yarns, and consisted of hosiery and other knitted goods to the value of $403,137. The remaining products were chiefly flannels, linseys, and cotton-warp cloths. The other details regarding this phase of the manufacture are contained in the following table:

WOOL MANUFACTURE—STATEMENT OF PUBLIC, PENAL, AND ELEEMOSYNARY INSTITUTIONS.

STATES.	Number of institutions.	Employés.	Total wages.	Cost of materials used.	Value of products.
Total	14	1,419	$88.279	$279,800	$462,585
New York (*a*)	3	604	24,697	53,708	97.995
Pennsylvania (*b*)	3	432	36,060	132,181	196,306
All other states (*c*)	8	383	27.522	93,911	168.284

a Institutions in New York: hosiery and knit goods, 3.

b Institutions in Pennsylvania: hosiery and knit goods, 1; carpets, 2.

c Includes states having less than 3 institutions, so that the operations of individual institutions may not be disclosed. These institutions are located as follows: Maryland, 1, hosiery and knit goods; Minnesota, 1, hosiery and knit goods; New Hampshire, 1, hosiery and knit goods; Ohio, 2, hosiery and knit goods; Texas, 1, woolen goods; Virginia, 1, hosiery and knit goods; Wisconsin, 1, hosiery and knit goods.

METHODS OF THE PRESENT INVESTIGATION.

In the preparation of the schedules for this inquiry pains were taken to avoid, so far as possible, any modifications that would prevent accurate comparisons with the statistics collected in 1880. The schedule of the last census was prepared by the late George William Bond, of Boston, and the data collected were compiled under his direction. Mr. Bond was recognized as the leading expert in the United States on all questions connected with wool and its manufacture. He had annually compiled since 1865 a review of the wool markets of the country, for the Boston Board of Trade, and his annual wool circulars contained the accepted data regarding the volume and movement of the clip. He was familiar also with the manufacture, and his schedule, the first special census schedule prepared for this industry, was based upon an intimate knowledge of the conditions of the industry, and of the information likely to be of service in connection with a statistical exhibit of its condition and progress. The present special agent accepted Mr. Bond's schedule after correspondence with manufacturers, except in two particulars. It was evident that the inquiry of 1880 had not resulted in a satisfactory return of the

capital invested, and for Mr. Bond's questions, under this head, were substituted those adopted by the Census Office for uniform use upon all the special schedules relating to manufactures. In the classification of products a new system was also adopted. In these two particulars no comparison of returns as between 1880 and 1890 can be safely attempted. In other respects it is believed that the comparison is exact and accurate. At the same time the statistics of the manufacture are now presented with a detail and closeness of analysis exceeding anything attempted in 1880. This is particularly the case in the wage tables and in the assignment of values to the different varieties of manufactured products.

NUMBER OF ESTABLISHMENTS.

The total number of establishments for which returns were received at the Eleventh Census was 2,770, of which number 267 were not in operation during the census year, and 14 were conducted by public, penal, and eleemosynary institutions. The number of establishments reported in 1880 was 2,689.

The number of establishments affords no clew to the growth or condition of the industry of wool manufacturing. This is due to the fact that in all censuses of the industry (except that of 1860) the custom carding mill has been counted as a woolen factory, although it is not, in the modern use of the term, a factory, and it ought therefore to be excluded from the statistics of factory manufacture. The present census has made such an elimination possible hereafter by a separate return of the statistics of custom carding mills.

CUSTOM CARDING MILLS.

These mills are simply neighborhood industries, similar in character to grist mills or the ginning mills of the cotton districts, that prepare the locality wool for the household spinner and weaver. Formerly they were scattered in great numbers all over the country, and were frequently combined with fulling mills, which finished the home-spun cloth for domestic use. Nearly every New England township had its carding and fulling mill, with machinery generally moved by water power. The trade of the clothier and fuller was as distinct as that of the hatter, and both have nearly disappeared. In Vermont, in 1810, 1,040,000 yards of cloths and flannels were woven in private families and dressed in these mills. In 1840 the census reported the existence of 2,585 fulling mills, which included the woolen mills (*a*), and it is probable that even at that late date the value of the woolen goods made in the household, with the assistance of these auxiliary mills, exceeded the value of the factory product. In 1850 the wool-carding establishments, exclusive of regular woolen factories, were returned as 630 in number, consuming wool to the value of $1,251,550 and manufacturing a product valued at $1,739,476. In 1860, when the census was more closely taken, the number of carding mills reported was 712, using 5,230,651 pounds of wool, of a value of $1,759,125, which were converted into rolls valued at $2,403,513. The geographical location of these mills show how strictly they were the pioneers of an advancing civilization. They had then almost disappeared from the New England states, but 64 being reported there, as compared with 99 in the middle states, 217 in the southern states, and 328 in the western states, with four establishments only in the Pacific states. The average value of the wool carded was 33½ cents a pound.

No data appear in the census reports of 1870 to show the number of carding mills included in the returns for that year. The census of 1880 had returns for 570 carding mills, which it did not separately report, and from 233 other mills, each of which used less than 5,000 pounds of wool per annum.

With the growth of the factory manufacture these custom carding mills are disappearing with accelerating rapidity, and there are now left in the United States but 193 distinct carding mills of which the special agent could obtain trace. These are very irregularly located, as shown in Table 15, where a distinct statement is made for them, although they are included as woolen mills in all preceding tables.

These 193 carding mills employed but 416 persons, all told, to whom were paid $61,618 in wages; they consumed but 874,253 pounds of scoured wool, which was chiefly converted into rolls for household use, and was worth $476,278 in that form. The very low average earnings indicated by the above figures was due primarily to the fact that most of these mills were in operation for portions of the census year only. Such wage statistics obviously have no proper place in the general statistics of the wool manufacture.

There were in addition a number of returns received upon the general manufacturing schedule from mills which ran a carding engine for a few months in the year in connection with the grist mill or sawmill, which comprised the chief business of the establishment. No effort was made to include any portion of these returns in the statistics of wool manufacture herewith presented, and the actual consumption of wool in carding mills is therefore in excess of the quantity stated.

The census of 1860 showed the employment of 1,276 persons in carding mills whose earnings aggregated $286,267, a much larger annual average than that shown in the statistics for 1890. This difference in the earnings as between the two periods is the most striking evidence of the decadence of the custom carding mills as a feature in the industrial condition of the country. While earnings in every other branch of wool manufacturing have greatly advanced they have here greatly fallen off.

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a See Census of Manufacturers, 1860, p. xlviii.

It was exceedingly difficult to obtain satisfactory returns for these carding mills. In a majority of cases the proprietors reported that they did their own work, often with the assistance of members of their own families, to whom they paid no wages. In many cases, also, they declined to put a value upon their product, for the reason that they carded the wool of their customers into rolls, never owning the wool themselves, but charging so much per pound for their labor. In other instances they received their pay in produce. The wool thus carded entered almost invariably into household manufacture, which still exists to a considerable extent, particularly in the states of Maine, Pennsylvania, Kentucky, Tennessee, Missouri, Wisconsin, and Minnesota.

The inclusion of these small carding mills in the number of establishments reporting has deprived that column of any value as a test of growth. Thus the total number of establishments reporting in the several censuses, was as follows:

1840	1,420	1870	3,456
1850	1,760	1880	2,689
1860	*a*1,673	1890	2,770

The number of actual mills in existence in 1890 was much larger than at any previous census, if these local industries are excluded.

It must also be considered that the "number of establishments" does not exactly represent the number of mills, for the reason that two and sometimes three mills, formerly reported separately, are frequently consolidated and operated under one management, from which but a single report is received.

SIZE OF WOOLEN MILLS.

The tendency of the industry is in the direction of larger mills. The majority of the establishments in the earlier days of the industry were one and two set mills, and this continues to be the case in the southern and western states. But in the eastern states the larger mills now greatly predominate, as is shown by the following table, which groups the woolen mills of the several geographical divisions according to their machinery capacity:

NUMBER OF MILLS OF EACH CLASS.

GEOGRAPHICAL DIVISIONS.	Total.	1 set.	2 set.	3 set.	4 set.	5 set.	6 set.	7 set.	8 set.	9 set.	10 to 15 set.	15 to 20 set.	20 set and over.	Carding mills.
Total	1,656	364	246	157	133	79	100	55	66	29	127	47	60	193
New England states:														
Woolen mills	504	47	49	44	53	34	39	26	33	16	72	26	37	28
Hosiery and knitting mills	59	8	9	7	6	5	6	5	5	1	6	.....	1	.....
Middle states:														
Woolen mills	466	120	78	53	34	22	34	6	17	6	25	17	18	36
Hosiery and knitting mills	108	3	11	15	16	7	13	14	3	6	15	3	2	.....
Southern states:														
Woolen mills	197	57	38	10	8	2	.....	.....	1	.....	5	.....	1	75
Hosiery and knitting mills	2	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
Western and Pacific states:														
Woolen mills	301	123	56	24	12	8	7	4	7	.....	4	1	1	54
Hosiery and knitting mills	19	6	4	4	4	1	.....	.....	.....	.....	.....	.....	.....	.....

GEOGRAPHICAL LOCATION OF THE INDUSTRY.

The American wool manufacture, during the period in which the household branch of it predominated, was scattered over wide sections of the country and into remote and inaccessible districts. This was naturally the case at a time when so large a proportion of the population literally made their own clothing, from the growing of the raw material to the weaving of the goods. Two causes tended to make the custom carding mill the genesis of the modern factory, and the wool manufacture of to-day is an evolution from the household industry to a degree and in a sense unknown in any other textile manufacture. These causes were the necessity of locating upon a stream for water power and the advantage of being near the supply of the raw material. The custom carding mill found its patronage in districts where the flocks abounded. As it developed into the primitive woolen factory, it was still a great advantage to be near the sheep, for transportation was difficult and costly. In the case of the early mill at Oriskany (New York), a large flock of merino sheep imported, owned, and cared for by the mill owners, was one of the adjuncts of the manufacture. As the flocks spread in the new states, the mills were planted in their midst, and not clustered in a few centers, as in Europe.

a Exclusive of carding mills.

This diffusion of the industry over wide areas is brought out strongly in the earlier censuses, and its modern tendency to gradual concentration is a most important deduction to be drawn from the present census. Ohio, in 1870, then our largest wool-growing state, reported 230 woolen mills, with 334 sets of machinery, distributed throughout the state. In 1890 the number of mills in Ohio had fallen to 113 and their machinery capacity to 112 sets. These Ohio mills were brought into existence by the proximity of the raw material, and they formerly used only the wool grown in their immediate neighborhood. What was true of Ohio was true also of Illinois, Indiana, Iowa, Michigan, Wisconsin, Missouri, and other western states which were prominent thirty and forty years ago as producers of the raw material of this manufacture.

It is a peculiarity of the wool industry here and everywhere that its original characteristics were largely determined by the quality of the domestic wool supply. Thus, Turkey, growing nothing but carpet wools, has manufactured few cloths, but her rugs and Smyrna carpets have found their way to all the markets of the world; England, where the long combing wool sheep was early developed, invented the countless dress fabrics for common consumption made from this fiber, and England's historic supremacy in the wool manufacture is due primarily to the superiority of her domestic wool clip; Germany, having produced the electoral fine wooled sheep, brought the manufacture of light and fine broadcloths to a perfection which was for a long period unrivaled elsewhere; France established her reputation for the finest all-wool goods, such as cashmeres, serges, and countless novelties of like character, as the result of her success in breeding the merino combing wools. So the United States, where originally the domestic wool supply consisted chiefly of the fleece of the Spanish merino, confined her manufacture for years chiefly to the strong, staple, plain fabrics for which this material is so well adapted.

The following table illustrates statistically the gradual geographical evolution of the industry and its modern tendency to localization. It shows the percentage of the total wool carding machinery of the country located in each of the chief manufacturing states at the several census periods since 1870:

WOOL CARDING MACHINERY, BY STATES, 1890, 1880, AND 1870.

STATES.	1890		1880		1870	
	Number of cards (sets).	Per cent of total.	Number of cards (sets).	Per cent of total.	Number of cards (sets).	Per cent of total.
Total	8,198	100.00	7,581	100.00	9,224	100.00
Massachusetts	1,837	22.41	1,660	21.90	1,512	16.39
Pennsylvania	1,299	15.84	1,155	15.24	1,468	15.92
New York	1,403	17.11	1,150	15.17	1,170	12.69
Rhode Island	572	6.98	495	6.53	490	5.31
Connecticut	646	7.88	622	8.20	752	8.15
New Hampshire	492	6.00	385	5.08	418	4.53
Maine	387	4.72	274	3.61	335	3.63
New Jersey	235	2.87	184	2.43	111	1.20
Vermont	157	1.91	167	2.20	200	2.17
Ohio	112	1.37	182	2.40	334	3.62
Indiana	153	1.87	160	2.11	346	3.75
Illinois	71	0.87	109	1.44	251	2.72
In above twelve states	7,364	89.83	6,543	86.31	7,387	80.08
All other states	834	10.17	1,038	13.69	1,837	19.92

If this table could be carried back of 1870 it would demonstrate even more strikingly the tendency to concentration exhibited during the last twenty years. In the woolen manufacture the New England states possessed in 1870, 40.18 per cent of our machinery capacity; in 1880, 47.52 per cent, and, in 1890, 49.90 per cent. Three middle states, Pennsylvania, New York, and New Jersey, possessed in 1870, 29.81 per cent; in 1880, 32.84 per cent, and in 1890, 35.82 per cent. All the remaining states in the union, which contained 30.01 per cent of our woolen machinery in 1870, contained but 19.64 per cent in 1880, and but 14.28 per cent in 1890. The eight leading states, as shown above, contained 67.82 per cent of this machinery in 1870 and 83.81 per cent in 1890. The enormous growth for the three census periods has thus been confined to these eight states, while in the remaining states there has been an actual loss of 55.29 per cent in machinery capacity.

To properly estimate the momentum of this gravitation, the worsted industry must be included, and this branch of the manufacture is confined almost wholly to the eight states above mentioned, as shown by the following table:

STATES.	1890		1880		1870	
	Number of combs.	Per cent of total.	Number of combs.	Per cent of total.	Number of combs.	Per cent of total.
Total	855	100.00	518	100.00	261	100.00
Massachusetts	265	30.99	190	36.68	172	65.90
Pennsylvania	191	22.34	124	23.94	29	11.11
New York	88	10.29	80	15.44	1	0.38
Rhode Island	195	22.81	70	13.51	7	2.68
Connecticut	34	3.98	21	4.06	34	13.03
New Hampshire	29	3.39	21	4.05	12	4.60
Maine	5	0.59	.....	.....	.....	.....
New Jersey	29	3.39	9	1.74	6	2.30
In above eight states	836	97.78	515	99.42	261	100.00
All other states	19	2.22	3	0.58	.....	.....

These eight states therefore may be regarded as the future seat of the woolen and worsted manufacture of the United States. They are the same states in which the cotton, silk, and allied industries predominate.

This tendency may be illustrated in another way. The three cities of Philadelphia, Lawrence, and Lowell consumed, in 1890, 83,587,642 pounds of wool, as follows:

	POUNDS.
Total	83,587,642
Philadelphia, Pennsylvania	52,739,329
Lawrence, Massachusetts	13,943,944
Lowell, Massachusetts	16,904,369

The wool consumption of these three cities was in excess of the amount of wool consumed in all the states of the Union combined, with the exception only of the six states of Massachusetts, Pennsylvania, Rhode Island, Connecticut, New York, and New Hampshire. These six states, with the addition of Maine and New Jersey, consumed in their manufactures 327,050,412 pounds of wool, while all the remaining states in the Union consumed but 45,747,001 pounds.

RANK OF THE STATES IN WOOL MANUFACTURE.

From the beginning of the century until 1880 the state of Massachusetts held undisputed supremacy as the chief wool manufacturing state of the Union. The status of the industry in Massachusetts, as shown by the state census, has been as follows in the years named:

CLASSIFICATION.	1845	1855	1865	1875	1885
Number of establishments	178	146	266	242	189
Capital	$5,604,002	$7,305,500	$9,477,276	$15,800,437	$29,995,668
Value of stock used	.....	.....	$22,746,593	$21,471,327	$19,422,953
Persons employed	7,372	10,090	18,965	19,193	18,970
Wages paid	.....	.....	.....	$5,542,015	$5,688,981
Value of goods made	$8,877,478	$12,105,512	$31,550,081	$36,469,626	$31,748,278

In 1880 the value of the products of Massachusetts woolen mills was surpassed by the value of Pennsylvania products, although Massachusetts continued to lead Pennsylvania in the amount of capital invested in the industry, and in the quantity of wool consumed, while Pennsylvania exceeded Massachusetts in the number of employés and in the amount of wages paid. The value of Massachusetts products in 1890 was $72,681,408, and the value of Pennsylvania products $89,337,419. In the manufacture of woolen and worsted goods proper Massachusetts may still claim the first rank, basing that claim upon the fact that her mills consumed in that year 99,569,455 pounds of wool, as compared with 70,041,261 pounds consumed in Pennsylvania. Except in the matter of capital invested, Pennsylvania now stands at the head of the list in all other particulars.

The state of New York retains the third rank among the states, due in 1890 as in 1880 to the great production of hosiery and knit goods, which comprised $24,776,582, in a total production valued at $53,340,151.

Connecticut and Rhode Island have changed places during the decade, the former state falling from the fourth to the fifth position, and the latter advancing from fifth to fourth. The actual decrease in the value of the products of the state of Connecticut has been commented upon elsewhere; but apart from this apparent decrease in Connecticut, the advance in Rhode Island has been phenomenal, the percentage of increase amounting to 60.57 per cent.

New Hampshire occupies the sixth rank among the states, which was also hers in 1880. New Jersey passes from the eighth to the seventh position, changing places with Maine. Ohio holds the ninth rank, closely pressed by Indiana and Vermont, and the twelfth state is Wisconsin, which has outstripped half a dozen states which were her superiors at the census of 1880.

Among the cities, Philadelphia now, as heretofore, occupies the first rank in the manufacture of woolen and worsted goods. The rank of the different cities in wool manufacturing, as determined by the value of their products in 1880 and 1890, was as follows:

CITIES.	RANK.		Value of products, 1890.
	1880	1890	
Total			$121,433,937
Philadelphia, Pennsylvania	1	1	73,713,856
Lawrence, Massachusetts	2	3	10,431,192
Providence, Rhode Island	3	2	18,237,531
Lowell, Massachusetts	4	4	7,037,174
New York, New York	5	5	4,377,337
Manchester, New Hampshire	6	6	2,963,550
Camden, New Jersey	(a)	7	2,507,031
Chester, Pennsylvania	(a)	8	2,166,266

a Not reported separately in 1880.

These eight cities manufactured in 1890 35.95 per cent of the total product of the industry.

The drifting of the manufacture into this comparatively limited area, and its consequent disappearance in other sections, is in no sense a sign of decadence, but is the evidence of the gradual response of this industry to the new conditions to which the development of the factory system has given rise in other industries. The wool manufacture, being in a sense the pioneer of all the textile industries, and more extensively pursued as a household art than any other which has yielded to the methods of the factory system, has in the nature of things been the last to resist the full application of those methods. It still retains characteristics of the household industry which have never been found at all either in the cotton or the silk manufacture as they are conducted in the United States.

Home-grown wool, as a rule, now seeks certain general markets, to be thence distributed to the mills contiguous to them. The distribution of the products, no longer made as formerly through local agencies, is now effected by a highly organized system of commission houses and selling agencies, most advantageously located in the large mercantile centers. Other advantages arising from this concentration increase in importance as the industry becomes more highly organized. One of them is the advantage in the labor market. The skilled operatives required in the wool manufacture are more easily obtained in the localities where there is the most work to be found. Hence practical men say that the best place to plant a new woolen mill is by the side of those which have been long established; and hence the towns and localities in the New England and middle states, which have become, either through accident or by reason of superior water, or water power, the centers of this industry, are likely to retain it and to show its largest future development. The possession of exceptional water power privileges made Lawrence and Lowell natural textile centers, and the water power of the Blackstone river was the original reason why Rhode Island is now so thickly studded with woolen and cotton mills. It will generally be found that superior water power is present at any point where the textile industries show a tendency to localize, although Philadelphia offers a marked exception to this rule, an exception explainable on the ground that the water of the Schuylkill river is especially fitted for the processes of the wool manufacture, while the development of steam has rendered water power less essential to successful manufacture than in the early days of the industry.

Some effort has been made to attribute the localization of the wool manufacture to climatic conditions. Mr. Henry Mitchell, a Bradford (England) manufacturer, testified before a Royal Commission in 1885 that the matter of climate has much to do with the successful wool manufacture, particularly of worsted yarns, and on this point he said:

> I do not think the Americans will ever be able to make yarns so good as we can in this country. The climate of the United States is very unfavorable for the spinning of worsted yarns. The very great changes that take place, the intense heat in summer and the intense cold in winter, are very unfavorable to the spinning of our yarns. A moist climate is more suitable for them. This does not apply to the same extent to Germany. I think it likely that Germany in time will be able to supply their own manufacturers with those yarns.

While there is much truth in what Mr. Mitchell says about the influence of a moist atmosphere in spinning worsted yarns, it is also true that modern mechanical devices for moistening the atmosphere and regulating the temperature of spinning rooms have rendered the question of outside temperature and humidity one of little importance.

SPECIALIZATION OF THE INDUSTRY.

Another advantage growing out of the concentration of the industry is due to the differentiation or subdivision of the manufacture, which has long marked it in Great Britain, and is gradually finding its way into the conduct of the industry in the United States. All the processes of manufacture were uniformly conducted under one roof in the primitive woolen mill of America, a method of manufacture necessitated by its widely scattered location. To-day it is common to find mills devoted exclusively to the manufacture of yarns for sale. Other mills, while making some portion of their own yarns, weave largely in excess of their yarn production, and still other mills simply dye and finish the goods sent them by weaving establishments.

This specialization has already produced results, as applied in this country, similar to those which M. Alcan attributed to it in France: "it facilitates the labor, concentrates the aptitudes, regulates the production, and contributes to ameliorate the results and the economic conditions. Specialization renders the industry accessible to all, to moderate fortunes as well as large capital". By reason of the separate establishment of yarn mills, equipped to supply on quick notice all counts and varieties of worsted yarns, many woolen mills were enabled to turn their product at once into worsteds in response to a sudden change in popular taste without the necessity of radically altering their machinery equipment.

As this tendency to specialization becomes more marked in this country, and the conditions surrounding the manufacture approximate more closely those existing in England and on the continent, we may expect the industry to become more diffused, with an increase in the number of establishments of small capital, by reason of the smaller investment required for machinery.

The rapidity with which this specialization has advanced during the last decade is shown by the statistics of yarns made for sale. The quantity of worsted yarns so made in 1880 was 13,022,219 pounds, and in 1890 it had risen to 29,376,182 pounds. There was a smaller increase in the quantity of woolen yarn made for sale, the quantity in 1880 being 28,581,950 pounds, and in 1890 35,415,360 pounds.

It is this differentiation of the manufacture which has made Philadelphia the chief textile center of the United States, producing in the census year, 1890, 21.82 per cent of the entire wool manufacture of the country, and fast placing the manufacture there upon a footing like that which prevails in Bradford, England, where the scouring of the wool is done by one establishment, the carding and combing by another, the spinning by another, the weaving by another, the dyeing and finishing by still others, while the packing of the goods for the market often constitutes still another distinct subdivision of the business. This minute subdivision of the industry is largely the outgrowth of conditions rather than a tendency evolved from experience; but it may be said to be definitely determined that the best results are attained by it. Under this system a community like Bradford is a great beehive of interdependent industries, the separate stages of the manufacture being carried on in separate establishments. The whole energy of the management in each branch is devoted to securing the best results in that particular branch under the most economical conditions.

PECULIAR DIFFICULTIES AND VICISSITUDES OF THE INDUSTRY.

It is the commonly accepted belief, for which there is ample explanation, that the wool manufacture is the most hazardous and precarious of all lines of manufacture. Chief among the reasons for this is its dependence upon the changes of fashion. In the cotton manufacture the whole product of a mill will frequently consist of a single fabric. Samuel Batchelder, in his "Notes on the Introduction of the Cotton Manufacture" (1863), states that "thousands of looms are employed making drillings of precisely the same description, with the same number of threads both in the warp and filling, of the same average weight, with yarn of the same fineness, and without the least variation in any particular, as were first invented and made by me in 1827". In the modern wool manufacture the requirements of fashion demand new patterns every season. A large fancy cassimere mill will produce 200 to 1,000 distinct designs each season, adding greatly to the cost of manufacture. In some mills there are made not less than 50 distinct varieties or classes of fabrics, exclusive of styles. Success in the manufacture may therefore be said to depend upon a capacity to understand the popular taste, to anticipate its demands, often capricious and incomprehensible, and to adapt the product of the mill to the requirements of the market. It frequently happens that the entire output of a season will be thrown back upon the manufacturer because of some failure of pattern or coloring to conform to the popular whim. Such a catastrophe will in many cases bring ruin, where a prosperous season might have been predicated upon the experience of the season previous. The liability of the American manufacturer to calamities of this description is increased by the habit which prevails in the United States of determining the fashions in garments by standards which are set abroad.

Again, the woolen manufacturer deals with an expensive and peculiar raw material. No degree of skill in the selection of the raw material of other fabrics is equal to that required in buying and applying wool. Its preparation is also more difficult, and the finish of its products is much more complicated. The manufacturer suffers constant loss in consequence of minor defects in fabrication. An entire cut of cloth will be thrown back upon him in consequence of mispicks, threads out, or other defects, due to careless weaving. The perils of the

dyeing and finishing rooms are even greater. The dyeing of wool fabrics requires what is a distinct art by itself in Europe; and in some branches, such as the indigo fermenting vat, is the most difficult work in practical chemistry. Some slight miscalculation in the combination of dyes or acids will weaken or depreciate the fabric and throw it into "seconds".

Some branches of the wool manufacture, like carpets, require the most complete knowledge of the principles of decorative art; others, like that of printing stuffs, are based upon a knowledge of the chemical arts. No other manufacture brings so fully into play the results of scientific research and the practical applications of art, while the delicacy of its operations greatly increases the risks and adds to the cost of manufacture.

Still another obstacle in the way of success in the wool manufacture in the United States is the terms of sale which, as a rule, now prevail with those whose product finds the market through the commission houses. These terms of sale frequently compel the manufacturer to begin a season's manufacture before he has received his payment for the goods of the previous season, and only abundant capital can stand the strain of these conditions. The accumulation of goods in commission houses, the cancellation of orders for goods already manufactured or in process, the long credits, the risks of carelessness by operatives, all combine to make conditions under which it is not surprising that many fail, and it is not necessary to look beyond these conditions to find adequate explanation of the fact that the proportion of failures is larger in this branch of manufacturing than in any other.

The large percentage of idle machinery found during the census year thus has another explanation, which is perhaps the most comprehensive of all. The volume of capital which has been sunk in this branch of manufacturing will bear a larger proportion to the total capital invested than in any other. Instances are frequent where the money expended in equipping a woolen plant has been entirely lost before that plant has been finally brought to the point of earning a fair return upon the active capital required in its operation. In this way it happens that the New England and middle states are full of mills which have passed through many hands, and are only identified with the establishments reporting ten or twenty years previously, by the fact that they occupy the same premises.

It is apparent from this résumé of the conditions surrounding the wool manufacture that it is an industry in which success on any extended scale requires an unusual degree of intelligence and skill. This fact may explain in some degree the remarkable changes which have occurred in the personnel of those conducting it in the United States. The degree of this change has been shown to the special agent by a careful comparison of the lists of the manufacturers reporting to the censuses of 1870, 1880, and 1890. The changes in the names of these manufacturers indicate that the financial mortality among them has been frightful. The wool schedule contained an inquiry as to the date of establishment of each mill reporting; 2,377 replied to it, and the result of these replies shows that about 50 per cent of these establishments were organized in the last census decade, 1880–1890. While in numerous instances it is probable that the date of the reorganization of a mill has been improperly given as the date of its origin, yet the actual proportion is not far from that stated.

CAPITAL.

It is obvious that the amount of capital employed in the wool manufacture has never been fully reported. In 1880 it was given as $159,091,869, to manufacture products valued at $267,252,913. In 1890 it is reported at $296,494,481, not including value of hired property, to manufacture a product valued at $337,768,524, an apparent increase of 86.37 per cent in the capital, as against an increase of but 26.39 per cent in the value of products.

There was, in reality, no such increase in the capital employed. The actual increase was probably something higher than the increase in products, allowance being necessary in measuring the relations of the two items for the fall in values.

The more exact form of the inquiry of the schedule of 1890, in relation to capital, has led to a much closer return than ever before. In the special schedule relating to wool manufacture in 1880, this question read as follows:

58. Amount of capital invested in works and employed in business, including both fixed and active capital or surplus.

While this question apparently covers the same ground as the more detailed question of 1890, it is made evident by an inspection of the returns under it that it was not so regarded, and that materials and stock on hand and goods in process were as a rule overlooked, as proper items of active capital employed. Just to what extent they were overlooked it is impossible to say, because the census of 1880 did not classify the capital employed into the fixed capital invested in land, buildings, and machinery, and that required to carry on the business. We find the fixed capital thus invested in 1890 to be $129,721,571, or almost equivalent to the total amount of capital reported in 1880. This establishes the meagerness of the return of active capital in 1880.

The fixed capital represented $14,954,323 invested in land, $40,144,544 invested in buildings, and $74,622,704 invested in machinery, or in the proportion of 11.53 per cent invested in land, 30.95 per cent in buildings, and 57.52 per cent in machinery. In addition to the above, $17,320,780 of hired property was utilized in the wool manufacture, which is not included in the above statement of fixed capital. Of the three items, that of land is the one which contains the most elements of flexibility. There are many instances in which the land value is determined by the fact that the factory exists upon it. The wool manufacture is in many instances an isolated industry, often the

only one in the town, and its disappearance would take from the land the greater part of the value now nominally attaching to it. The status of the two industries of wool and cotton manufacturing presents a marked contrast in the matter of the capital invested in realty. The latter industry is more concentrated and is usually conducted in buildings more expensively constructed. While the product reported for the cotton manufacture has a value of $69,786,800 less than that of the wool manufacture, the capital invested in its plant is $101,271,996 in excess of that invested in wool manufacture.

On the other hand, when we turn to the live assets, we find the active capital employed in the wool industry $43,745,634 in excess of the similar items in the cotton manufacture. This fact is also in accord with well-known conditions surrounding the two industries. The conduct of the wool manufacture requires a larger capital than cotton, because of the much higher cost of the raw material employed, and of the longer time required to carry the stock through the various processes of the manufacture.

Of the active capital employed a large portion is borrowed money, and the amount of the liabilities of different mills varies greatly at different seasons, in accordance with the conditions at the time, whether it is at the beginning or the close of a season's operations. It is impossible under these circumstances to arbitrarily determine the total amount of active capital required to carry on this industry for a year of operations; but that the amount reached by this investigation, $166,772,910, is a fair average for the operations of the census year is determined by two tests.

First. It occupies the proper relationship to the fixed capital invested in plant. Most woolen mills will require active capital equal to or in excess of the cost of the investment to carry on operations. The proportions will vary in different mills, according to their methods, the state of their surplus, and the magnitude of their operations, but for a general average the above statement is correct.

Second. It is a general rule that a well-conducted wool manufacturing establishment will turn its active capital twice in a year. The value of the product here reported is a few million dollars more than double the $166,772,910 of active capital returned, and it therefore represents a value of product such as may be regarded by commercial tests as requiring that amount of active capital to produce.

Analyzed in this way, we find that the statement of capital invested is in keeping with all the other conditions, and it may therefore be claimed for it that it is an accurate presentation of this important and perplexing feature of census investigation. Hitherto the returns of capital have been abnormally low when measured by the collateral statistics. In the present investigation they show what would otherwise be an abnormal increase, the apparent increase being largely due to closer methods of inquiry in the later census.

The tendency in woolen manufacturing of late years has distinctly been in the direction of the corporate form of management, although it is much less marked in this industry than in the cotton manufacture. The Massachusetts census of 1885 shows that more than two-thirds of the cotton manufacturing establishments of that state were corporations, while of the woolen goods establishments nearly eight-tenths were private concerns. Over 95 per cent of the capital employed in Massachusetts cotton manufacturing was invested in a corporate form, and about 50 per cent of the capital employed in woolens was so invested. In other words, the very large woolen establishments are as a rule corporations, and the smaller mills are as a rule under private management. The figures for Massachusetts may be taken as a fair criterion of the conditions existing in other states. There is a prevalent opinion that the best results in wool manufacturing have hitherto been attained in this country under private management, and that this is due to the peculiar surroundings of the industry as contrasted with the cotton manufacture, which are commented upon in this report. Mr. Bond has written that nearly all the corporations engaged in wool manufacturing prior to 1857 had failed disastrously, many of them under stress of financial crises, which private mill owners successfully withstood, because their profits were not all distributed to stockholders in times of prosperity without sufficient regard to the great uncertainty peculiar to the industry. On the other hand, as competition grows closer and margins smaller, the advantages which spring from large capital and large product are becoming more defined.

EARNINGS OF CAPITAL.

These statistics do not show anything whatever regarding the profits made in the business of wool manufacturing. The schedule was so constructed, in its grouping of accounts current with the live capital or assets, as to prevent it from showing a true balance sheet of the business, and as a matter of fact it was impossible to determine from the individual schedules received whether the business had been conducted at a profit or a loss during the year covered by the report.

This statement is made in order to prevent any attempt, by adding together all the items of expense reported and subtracting the sum from the value of the goods made, to represent the remainder as the profits of those reporting. This remainder will have no closer relation to these profits than any other which might be arbitrarily fixed upon for that purpose, and for the reason indicated.

If thus figured, a result is shown equivalent to earnings of between 11 and 12 per cent on the gross value of the product, and even larger upon the capital invested. As a matter of fact, the gross profits of the wool manufacture will not average any such percentage, and the net profits, after sufficient allowance has been made for interest on plant, wear and tear, business losses, and the necessary replacement of machinery, will be still less

DUPLICATION OF PRODUCTS.

Another aspect of the statistics may be properly brought to attention in the same connection, because it presents a second insurmountable obstacle in estimating the profits of wool manufacturing on the basis of the census returns.

Such an estimate is statistically impossible, for the reason that the value of product reported includes a large element of duplication. Thus many mills are engaged exclusively in the manufacture of yarns for sale, while others make yarns both for sale and for weaving by their own machinery. The yarns thus sold constitute the finished product of these manufacturers and therefore enter into the total value of products; but they are simply the raw material of their purchasers, and appear again in the column of products, plus the added value of their weaving and finishing.

The fact that the value of yarns purchased is added to the cost of materials purchased might seem at first sight to afford a fair offset and confirm the approximate accuracy of the method of calculation above stated; but inasmuch as this method involves a computation based upon two profits instead of one, the profit of the yarn spinner as well as the profit of the yarn weaver, the estimate of profits is statistically impossible. The amount and value of duplicated products are given under the topic of "Products" on page 47.

The limitations we are now considering involve no just criticism upon the value of census statistics of manufactures. These duplications are inevitable in any inquiry which treats an industry as a homogeneous whole, and follows it through the several stages in which the finished product of one mill becomes the raw material of another. They were pointed out by Superintendent Walker, in connection with the statistics of manufactures in the census of 1870, and they may be easily estimated, with substantial accuracy, for the purpose of ascertaining the net value of products as distinguished from their gross value.

MISCELLANEOUS EXPENSES.

Little explanation is required under this item of expenditure, which now appears for the first time in the census of wool manufactures. It covers all the expenses connected with the running of a mill, outside the cost of materials and labor, such as rent, taxes, insurance, ordinary repairs, interest on cash used in the business, and the countless sundry expenditures peculiar to the conduct of any manufacturing business. These miscellaneous expenses foot up $19,249,508, which is 6.44 per cent of the total expenditures of the mills reporting, the cost of materials used being 67.92 per cent and cost of labor 25.64 per cent.

The division of these miscellaneous expenses into their several groups is as follows:

Total	19,249,508
Rent paid for tenancy	$1,348,818
Taxes	1,174,793
Insurance	1,353,049
Repairs, ordinary, of buildings and machinery	3,179,531
Interest paid on cash used in the business	5,841,963
Sundries, not elsewhere reported	6,351,354

The amounts reported as paid for taxes and for insurance are nearly the same; but in both cases the returns were defective, and no averages can be based upon them. The amounts paid, both for taxes and insurance, are much greater than reported. To illustrate: Of 113 establishments reporting in the state of Ohio only 101 reported any taxes paid and only 80 reported insurance. Of 56 establishments reporting from Wisconsin, 51 reported the amount of taxes paid and 45 reported insurance. Of 82 establishments reporting from Maine, 68 reported the amount of taxes paid and 55 the annual cost of insurance. Several Maine establishments reported exemption from taxation under local ordinances, and this exemption exists, to a limited degree, in some other states. In the matter of insurance there are many smaller mills, particularly in the west, which carry none. Owing to the defective character of the returns under these heads it is a fair conclusion that the total of $19,249,508 returned as the sum of "miscellaneous expenses" in the manufacture is smaller, by several millions, than the actual annual expenditures of the industry for these purposes.

MACHINERY OF THE WOOL MANUFACTURE.

The best test of the growth of the wool manufacture is not the number of establishments or the relative value of the products, but the increase in the machinery capacity. The comparative figures are as follows, for 1890 and 1880:

MACHINERY.	1890	1880	Percentage of increase.
Cards	8,198	7,581	8.14
Combing machines	855	518	65.06
Spindles	3,182,500	2,254,996	41.13
Looms	69,807	59,261	17.80

These figures, however, afford only a general clew to the increase in machinery capacity between the decades, and there are serious difficulties in the way of applying any exact standard of comparison.

In the woolen manufacture proper the set of cards has been uniformly accepted in the United States as the unit of capacity, and it has been adopted for this census. In Great Britain and the continental countries the spindle is generally accepted as the unit in the wool manufacture as in the cotton industry, and no record of cards in operation appears in the limited statistics of foreign countries.

There can be no doubt that the spindle is an accurate unit of capacity so far as the worsted manufacture is concerned.

In the woolen manufacture practical men regard the card as the most accurate unit of capacity, for the reason that in spinning woolen yarns much stock is run twice on the mules to obtain fine numbers of yarns, and the number of spindles operated is therefore not an accurate test.

The returns of machinery to this census have been so taken that either the card or the spindle can be hereafter adopted as the measure of capacity in making comparisons. But the conclusion is forced upon us that no such thing as a uniform and accurate standard of the machinery capacity of the wool manufacture is possible.

Entirely different results follow from the application of the two standards, the card and the spindle, to the growth of the industry in the decade from 1880 to 1890. This is because the worsted manufacture, in which the card does not necessarily appear as an essential machine, has grown very much faster than the woolen manufacture proper. Thus, the total number of sets of cards reported in operation in 1880 was 7,581, and in 1890 8,198, an increase of 8.14 per cent, while the spindles reported in 1880 were 2,254,996, and in 1890 3,182,500, an increase of 41.13 per cent. The percentage was really larger, as many cotton spindles reported with woolen and worsted spindles in 1880 are now reported with cotton manufacture.

CARDING MACHINES.

The difficulty with the card, as a unit of machinery capacity, arises from the diversity of the carding engine in capacity, in structure, and in use. No other evidence of this is required than the fact that the number of sets of cards reported by the census of 1870 was 9,224, and in 1880 it was only 7,581, but the actual production of our woolen mills in the latter year was far in excess of their production in 1870. This was partly because a larger proportion of the carding machines reported in 1880 were the one-cylinder machines employed in custom carding, the number of which has been rapidly decreasing as the household industry has been superseded.

The actual capacity of the regulation set of cards, with three cylinders, has also been greatly increased. As the carding engine is long-lived and expensive many of the older types remain in operation, particularly in the smaller mills, and their productive capacity is hardly one-half that of modern machines of nearly double their width and of greater diameter. The great improvements in the American system of wool carding date from about 1860. At that time the machines in common use were mounted on wooden frames, the main cylinders being 40 inches wide and 42 inches in diameter. During the civil war a few iron doffers, and then iron strippers, began to be made, after which the workers were made of iron. The cylinders are now frequently 60 inches in width and 48, 54, and 60 inches in diameter. The capacity of carding machines has been further increased by taking off a larger number of ends from the finisher cards, using narrower rings, thus allowing more material to run through the breakers.

An analysis of the returns at this census shows the following results as to the prevailing present width of cylinders:

NUMBER AND WIDTH OF CARDS, BY STATES AND TERRITORIES: 1890.

STATES AND TERRITORIES.	Actual number of sets in each state.	Number reporting width.	NUMBER OF CARDS OF EACH WIDTH REPORTED.								
			24 inches.	30 inches.	36 inches.	40 inches.	48 inches.	54 inches.	60 inches.	72 inches.	Miscellaneous.
Total	8,198	8,077	445	126	174	2,080	4,156	19	1,013	10	54
Alabama	8	8	4	1	.....	1	2	.....	.....	.....	.....
Arkansas	7	7	5	.....	1	1	.....	.....	.....	.....	.....
California	70	70	.....	.....	.....	15	55	.....	.....	.....	.....
Connecticut	646	646	18	.....	.....	180	432	.....	14	.....	2
Delaware	15	15	.....	.....	.....	.....	4	.....	11	.....	.....
Georgia	22	22	11	.....	.....	.....	9	.....	2	.....	.....
Idaho	1	1	1	.....	.....	.....	.....	.....	.....	.....	.....
Illinois	71	71	3	5	2	23	30	.....	8	.....	.....
Indiana	153	150	15	3	.....	34	69	1	28	.....	.....
Iowa	36	36	2	1	2	17	14	.....	.....	.....	.....
Kansas	1	1	.....	.....	.....	.....	1	.....	.....	.....	.....
Kentucky	104	104	27	4	1	6	28	.....	38	.....	.....
Louisiana	1	1	1	.....	.....	.....	.....	.....	.....	.....	.....
Maine	387	385	19	5	13	159	181	.....	8	.....	.....
Maryland	30	30	3	.....	3	3	2	.....	19	.....	.....

NUMBER AND WIDTH OF CARDS, BY STATES AND TERRITORIES: 1890—Continued.

STATES AND TERRITORIES.	Actual number of sets in each state.	Number reporting width.	NUMBER OF CARDS OF EACH WIDTH REPORTED.								
			24 inches.	30 inches.	36 inches.	40 inches.	48 inches.	54 inches.	60 inches.	72 inches.	Miscellaneous.
Massachusetts	1,837	1,808	29	.....	34	501	1,162	7	71	3	1
Michigan	68	68	14	5	1	17	25	.....	6	.....	.....
Minnesota	37	37	6	8	3	18	2	.....	.....	.....	.....
Mississippi	31	31	3	.....	3	4	10	.....	11	.....	.....
Missouri	52	52	18	6	2	9	12	.....	5	.....	.....
New Hampshire	492	481	5	1	6	281	176	3	7	1	1
New Jersey	235	235	1	7	5	1	164	.....	48	.....	6
New York	1,403	1,401	68	7	23	533	637	.....	88	6	39
North Carolina	35	28	9	6	4	4	3	2	.....	.....	.....
Ohio	112	112	26	11	6	28	27	1	8	.....	5
Oregon	21	21	1	.....	.....	2	18	.....	.....	.....	.....
Pennsylvania	1,299	1,233	87	24	36	96	428	1	561	.....	.....
Rhode Island	572	572	.....	1	14	52	476	3	26	.....	.....
South Carolina	1	1	1	.....	.....	.....	.....	.....	.....	.....	.....
South Dakota	3	3	1	.....	.....	1	1	.....	.....	.....	.....
Tennessee	80	79	27	8	4	9	14	.....	17	.....	.....
Texas	9	9	1	.....	.....	2	2	.....	4	.....	.....
Utah	31	31	5	1	1	2	22	.....	.....	.....	.....
Vermont	157	157	10	.....	3	32	96	.....	16	.....	.....
Virginia	60	60	1	14	3	15	21	1	5	.....	.....
West Virginia	42	42	17	1	4	14	5	.....	1	.....	.....
Wisconsin	69	69	6	7	.....	17	28	.....	11	.....	.....

This table demonstrates the insufficiency of the card as a unit of measurement by bringing out the great disparity in the width; that is, the capacity of the cards in operation. Of the 1,013 60-inch cards reported, 561 were located in the state of Pennsylvania, which indicates that the manufacturers of that state have been enlarging the capacity of their machinery more rapidly than those located elsewhere.

In 1880 and 1890 the special schedule contained an inquiry intended to reveal, in the one case, the average capacity per set of cards in pounds of clean wool, and in the other the average consumption per set, reckoned on full time, in clean stock as prepared for the cards. Mr. Bond tabulated and published the replies received to this question. They were also tabulated for the present census; but examination of the results made it evident that they were of little value, and they have therefore been abandoned.

The purpose was to obtain a basis for an estimate of the machinery capacity of the country in excess of its actual consumption. Mr. Bond's figures throw no light on this question, for the reason, among others, that they take no cognizance of the cotton, shoddy, and other materials passing over the cards in admixture with wool. Any statistics which depend upon so many diverse and constantly varying conditions might as well not be attempted. According to Mr. Bond's tables the average daily capacity of the woolen cards in 1880 was 764,000 pounds, or an average of 128 pounds per set per diem. By the present returns the average daily capacity of consumption, reckoned on full time, was 1,124,361 pounds, or 174 pounds per diem per set of cards. This was for the number of mills reporting, which did not include many of the smaller mills. Inquiry of manufacturers establishes that the average capacity of a modern set of cards varies from 100 to 300 pounds per day, being dependent upon the quality of stock and the purpose for which it is to be used. This statement, founded upon individual experience, is worth more than any averages obtained from the returns made by individual manufacturers engaged upon every variety of work.

It is clear from the above that the average capacity of woolen cards, as operated in 1890, was considerably in excess of their average capacity in 1880; and also that the actual capacity of our woolen mills as now organized is greatly in excess of their output, as was also the case in 1880. How much this output could have been exceeded had the demand for the goods existed it is impossible to say on the data obtained.

COMBING MACHINES.

The great increase in the machinery capacity of the United States between 1880 and 1890 has come through the introduction of worsted machinery, which has in many mills taken the place of the woolen card. No other phase of the manufacture so well demonstrates its development. In 1860 the number of combing machines was confined to the equipment of the 3 establishments engaged in the manufacture of worsted stuff goods, and a few carpet yarn spinners. In 1870 we had but 261 combing machines in the whole country. The census of 1880 reported 518 combing machines, an increase of 98.47 per cent over 1870, and the census of 1890 shows 855, a further increase of 65.06 per cent over 1880.

A combing machine, with its accompanying preparatory machinery, is estimated to equal the productive capacity of from 2 to 3 sets of cards. (*a*) On this basis the worsted machinery of the country was equivalent in its capacity to one quarter of the capacity of the woolen machinery, an estimate borne out by the relative consumption of raw materials and the relative value of products.

Of the 855 combing machines in use in 1890, 181 were of American manufacture, as compared with 134 in 1880, showing that the American manufacture of combing machines had gained but slightly in the ten years. There were 91 American made combing machines employed in the carpet manufacture in 1880, and but 41 in 1890.

The comb is one of the most delicate and expensive machines employed in the textile industries, and the efforts of the American builders to supply the home market have been hampered by the fact that the English makers have had a much longer experience with them. The preparatory machinery used in connection with the comb is now very largely manufactured in this country. Of the machinery connected with the card, practically all is made in the United States.

Although the development of industrial mechanism may be substantially the same in different countries, yet in each it shows peculiarities having their origin in each. Thus, the French system of spinning had its origin in the peculiarities of Heilman's combing machine, as contrasted with the English combing machines invented about the same time. It differs from the English method particularly in the drawing processes; the sliver is never twisted, but is only drawn out, at the same time that the fibers are constantly kept in a state of parallelism by passing over a circular comb. Each method has its advantages over the other. M. Charles Leroux, a French expert in worsted spinning, writes that while English yarns are sold in the French markets at lower prices than the French yarns, this is true only of the coarser numbers, and he adds, "a convincing proof of the superiority of the French method of spinning over the English method is that they have vainly attempted to spin cashmere yarn in fine numbers upon their frames in competition with us. Their mode of preparing wools for the process of spinning is not adapted to these numbers". One of the evidences of the advancement of the American manufacture into the higher branches of the industry during the last decade has been the equipment of several large mills with machinery adapted to the French system of spinning.

A distinction also exists between the carding machinery of England and the United States, but it results in no essential difference in processes. It is simply a difference in structure, due to the independent evolution of the carding engine in the two countries. The English carding machinery consists of a scribbler, containing two swifts, an intermediate, also with two swifts, and a carder, containing two swifts and a condenser. The American system has the same set of three machines (called here the first breaker, second breaker, and finisher), but each engine carries but one swift or cylinder. Similar structural differences exist in the apparatus for spinning woolen yarns employed in the two countries.

SPINDLES.

Table 4 indicates the number of spindles actively employed in the wool manufacture in 1890 as 3,182,500, as compared with 2,254,996 in 1880, an increase of 41.13 per cent.

This total number of spindles was subdivided into 2,329,099 woolen spindles, 657,324 worsted spindles, and 196,077 cotton spindles. Of the woolen spindles, 1,742,288 were located in woolen mills proper, as compared with 1,720,820 so located in 1880. Of the remainder, 207,180 were located in worsted mills and 312,756 in hosiery and knit goods mills, with 53,046 in carpet mills and 13,829 in felt mills. The worsted spindles were located: 479,675 in worsted mills, 151,132 in carpet mills, 19,750 in woolen mills, and 6,767 in hosiery and knit goods mills. This location of spindles illustrates how closely intertwined are the two branches of woolen and worsted manufacture, and why it is impossible to make an absolute statistical separation of these two branches.

The cotton spindles were located: 68,225 in worsted mills, 69,830 in hosiery and knit goods mills, 53,342 in woolen mills, and 4,680 in carpet mills. In the former case the spindles were employed almost wholly in spinning cotton-warp yarn for worsted dress goods and suitings. They were far from equaling the consumption of these mills

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a The estimates of practical manufacturers vary on this question, the variation being due to the different qualities and varieties of wool used and numbers of yarn to be spun. The following replies to letters of inquiry are submitted:

WANSKUCK MILLS,
PROVIDENCE, RHODE ISLAND, March 15, 1892.

Yours of the 14th instant at hand. One wool card, 48 inches, will use about 80 pounds of stock per day, and one Noble comb on the same stock will comb twice as much.

Yours truly,

JESSE H. METCALF, *Superintendent.*

PROVIDENCE, RHODE ISLAND, March 15, 1892.

A set of woolen cards 48 inches wide, making roving for an 8-run yarn with 48 rings, will produce from 75 to 80 pounds per day, and a card using a Bollette condenser would produce on the same work from 90 to 100 pounds per day. A Noble comb, making tops for 23 worsted yarn, would produce about 350 pounds per day. These figures are based on a very fine grade of wool, such as we would be obliged to use to spin up to 8-run yarn.

Yours truly,

PROVIDENCE WORSTED MILLS.

UTICA, NEW YORK, March 15, 1892.

The consumptive capacity of 1 set of woolen cards 48 inches wide, making roving for 8-run yarn as we run them, would be about 100 pounds per day, and of one Noble comb, making tops for No. 23 worsted yarn, would be about 350 pounds per day.

Yours truly,

ROBT. MIDDLETON, *President.*

in cotton yarns, as is shown by the total of 9,454,874 pounds of such yarns purchased for the use of the worsted mills. In large degree these latter yarns were simply transferred from the cotton to the worsted branch of the same general establishments. The cotton mills connected with such establishments as the Arlington, the Pacific, the Manchester, and the Lorraine mills are returned under the cotton census, and only figure here in the item of cotton yarns purchased. This method of separation was not pursued in the census of 1880, and that census took no account of the number of cotton spindles in operation in woolen and worsted mills, but grouped them all either as woolen or worsted spindles.

The hosiery and knit goods establishments operated 69,830 cotton spindles exclusively upon cotton hosiery yarns. How far behind their consumption of cotton yarns was the spinning capacity of this class of mills is shown by the purchase of 32,248,849 pounds of cotton yarns for use in manufacturing hosiery and knit goods. These mills largely rely upon spinning mills for their yarns, their purchase of 6,386,370 pounds of woolen yarns and 4,146,035 pounds of worsted yarns, in addition to the cotton yarns above stated, indicating that their consumption of yarns was about 30 per cent greater than their own product.

DOUBLING SPINDLES.

No separation of spindles into spinning and doubling spindles was called for on the schedule. In the English returns, under the "Factories and workshops act", this separation is made. In the woolen mills of Great Britain, in 1889, there were 3,107,209 spinning spindles and 299,793 doubling spindles, showing a proportion of 10.36 to 1. In the worsted mills there were 2,402,922 spinning spindles in the same year, and 669,328 doubling spindles, showing a proportion of 3.59 to 1. If the same proportion exists in the United States, and it must be approximately the same, the division of the spindles reported would be as follows:

SPINDLES.	Woolen.	Worsted.
Total	2,329,099	657,324
Spinning	2,124,073	514,116
Doubling	205,026	143,208

Spinning in woolen mills is performed upon the mule and in worsted mills upon the spinning frame where the English system is employed and upon the mule with the French system. There have been no radical changes in the method of spinning woolen yarn since the adoption of the self-acting mule, although slight changes in the mechanism have perceptibly increased the efficiency of the machinery. In all American mills down to the close of the civil war the spinning continued to be done on the hand-jack, which is still found in many of our smaller mills. In this respect American mills were some twenty-five years behind those of Great Britain. Automatic mules of English make were imported and their use was attempted, but not with satisfactory results. The English machines, being adapted to spinning uniform numbers, were ill adapted to the needs of the American manufacturer at that time, compelled as he was to use yarns of different numbers adapted to a variety of products. Several American inventors, working independently, succeeded in so far perfecting the automatic mule that a number were put in operation about 1868, (*a*) the first, it is believed, in the Chase mill at Webster, Massachusetts,and gradually several machines were perfected, which are peculiar to America and better adapted to the needs of the industry here than the spinning apparatus of any other country. The introduction of the automatic mule, which became general between the years 1870 and 1875, has enormously facilitated the manufacture.

It is stated by careful manufacturers that the substitution of the automatic or self-acting mule, with the improved machinery which has come during the same period, has resulted in a gain of from 33 to 50 per cent in productive capacity. The economic gain in the expenditure of labor is even more striking, two persons now easily accomplishing as much as four on the hand-jack. Experts have calculated the difference between hand-jacks and mules in the cost of manufacture as follows: 48 cents per 100 runs of yarn, with the jack; 20 cents with the mule, or less than one-half. There is also a great saving in the waste and a great gain in the uniformity of the product.

The hand-jack carries 140 to 240 or 300 spindles, revolving from 3,000 to 4,000 times a minute. Mules carry usually 300 to 480 spindles, but the number is now sometimes increased to 600. The number of revolutions is about the same.

In the organization of a woolen mill with one set of cards, from 10 to 15 horse power is required, which will keep from 300 to 500 spindles in motion; but this relationship varies greatly, according to the class of goods manufactured, the age of the machinery, and the capability of superintendents. American woolen mills vary in their equipment all

a Several authorities place the date of the introduction of the automatic mule several years earlier. Mr. William B. Weeden, of the Weybosset Mills, writes the special agent as follows:

PROVIDENCE, February 1, 1893.

DEAR SIR: In respect of automatic mules for spinning wool, several patterns of cotton mules were rudely adapted to that work in Lawrence and Manchester during the war, or as early as 1863. About the same time woolen mules were imported from England. Seth D. Paul adapted the Sharp and Robert pattern to the work of spinning wool. The Saco Water Power Machine Company built these automatic woolen mules, and a pair was started at the Weybosset mills in March, 1865. Machines of this description ran successfully for many years. Paul, who was an earnest and capable mechanic, afterward developed a pattern of his own, less complex and better adapted for spinning wool.

Truly yours, WM. B. WEEDEN.

the way from one to seventy sets of cards, and from 240 to 25,000 spindles. One set of cards will supply an average of four broad looms.

The frame spinning of worsted yarn is the same in the United States as in Great Britain, and is chiefly done on frames of English manufacture.

LOOMS.

Table 4 also contains the details of looms in operation during the census year. The total number of looms was 69,807, as compared with 59,261 in 1880, an increase of 17.80 per cent, a smaller percentage of increase than is shown in other machinery, with the exception of cards, because looms are not employed in the hosiery and knit-goods branch. Moreover there has been a large increase in the productive capacity of the modern loom as compared with other mill mechanism. There were found in operation in 1890 but 3,076 hand looms, as contrasted with 4,776 in 1880. In woolen and worsted mills, these hand looms were employed chiefly as pattern looms, and were only occasionally in operation. The remainder were in carpet mills, where the ingrain hand looms numbered 631, with 4,214 power looms, while the Venetian hand looms numbered 157, with 109 power looms.

The change from narrow to broad looms has been going on very rapidly. We had in 1890, 20,848 broad looms on woolen goods, and in 1880, 15,188. In 1890 there were 17,653 narrow looms on woolen goods, as compared with 17,733 in 1880. Practically the number of narrow looms remained the same, while the number of broad looms increased about 37 per cent. In worsted goods the change is not so marked, for the reason that ladies' dress goods continue to be made as a rule in the narrow widths. The broad looms employed on worsted goods in 1890 numbered 8,482, as compared with 2,612 in 1880, and the narrow looms numbered 11,447, as compared with 9,073 in 1880.

Very few narrow looms have been made for men's-wear weaving for twenty years past, and it is a safe statement that the number reported as still existing in woolen mills have been in operation for that length of time.

There is no department of the manufacture where the possibilities of greater economy of production are so marked as in the American weave rooms, a fact attested by the statistics given above. Many mills are filled with old looms which are incapable of successful competition with the splendid machines, with their stop motions, power pick-finding devices, etc., now turned out by the American loom manufacturers. Up to 1857, broad looms were run at about 45 picks per minute. In that year appeared a Crompton fancy loom, with 24 harness capacity, and 3 shuttle boxes at each end, operating at a speed of 85 picks per minute. This was a great stride in production, and no advance has since been so great. Other improvements since introduced by the Knowles Loom Works and the Cromptons have made it possible to speed broad looms up to 90 and 95 picks per minute, and in some instances to 100 and 105 picks. The various devices for facilitating production enable a larger production to be had from the looms now manufactured than the difference in speed alone would indicate, and some manufacturers estimate the gain in production as equal to 100 per cent in the last thirty years.

Looms of American pattern and improvement are now very largely used in England, and their superiority to the looms of other countries is conceded. These improvements have resulted in a greater regularity in the product, less waste of material, and greater saving of labor; one weaver in the lighter fabrics easily attending to two and even four looms. The power loom is worked without muscular effort; dexterity in the repairing of broken yarns being the chief requirement of the operative; consequently, women have largely superseded men in its operation.

The loom completes the category of machinery employed in the wool manufacture proper, so far as the census takes cognizance of it. The great variety of machinery employed in the finishing processes of the manufacture bears no relation to the statistical development of the industry, as it varies in every mill according to the peculiarities of the products upon which that mill is employed. It may be said generally of this machinery that very rapid progress has been made in the last twenty years, quite as marked, indeed, as in either of the mechanical departments we have been considering. In the finish of their goods, so that in appearance and "feel" they will compare favorably with goods made abroad, the American manufacturers have been learning very rapidly of late years, impelled thereto by a realization that this is the chief point at which their products have failed in the past in comparison with the wool manufactures of European countries.

THE INCREASE IN EFFICIENCY.

The absence of any uniform unit of measurement makes impossible a scientific and exact statement of the increase in efficiency in modern machinery. Another obstacle to such a comparison grows out of the irregular introduction of improved machinery. Writing on this subject to Special Agent Joseph D. Weeks, of the Tenth Census, in connection with his report on the statistics of wages for that census, Mr. George William Bond said:

> The progress of mechanical improvements has been continuous, and those establishments only have been really successful which have had the courage to abandon their old machinery as fast as improved forms have proved to be of real importance. Much of this rejected machinery has been sold to factories in distant parts of the country which were pioneers in the wool manufacture in their respective localities, and it is this that has caused many of the failures in such attempts.

The efficiency of labor has not perceptibly increased as a consequence of the increased efficiency of machinery. The tendency has rather been the other way, the improvements in spinning and weaving machinery particularly making it possible to substitute female labor for that of men. This labor is constantly shifting and changing, a tendency which operates to prevent any marked advance in its general efficiency.

Neither has the improved machinery resulted on the whole in reducing the average wages. So large a portion of the work in the wool manufacture is piecework that the general tendency has been to increase the earning capacity of individuals so employed by permitting a greater increase of product as the result of their labor.

IDLE MACHINERY.

Thus far we have been dealing only with the woolen and worsted machinery in actual operation during the census year. This is the first census that has differentiated the active and the idle machinery of the wool manufacture. The proportion of machinery absolutely idle was 6.95 per cent of the whole number of sets of wool machinery; a larger percentage would be required to indicate the productive capacity of our wool mills in excess of the actual output reported. The present statistics afford no clue to the proportion of machinery which was idle in mills partially in operation. As a matter of fact, this proportion was unusually large in 1889; for during the whole of the census year the wool manufacture labored under a depression to a degree not equaled since 1874.

Many mills, in reporting to the census of 1890, indicated one-fourth or one-third of their machinery capacity as not in operation at the time the report was made. While information of this character was too meager to be tabulated, it was evident that the machinery capacity of the country was equal to a production at least one-fifth greater than the actual product reported, including in this estimate the 7 per cent of machinery absolutely idle.

The total productive capacity of mills is limited by the necessity of changing for seasonable work, in mills making both light and heavy weight goods; by the changes in styles, affecting continuity of output, by extra time permitted in some states and limited or practically forbidden in others, and by other causes which might be adduced, which apply particularly to wool manufacturing. There has been no time since the civil war when the machinery capacity of this industry was not in advance of the normal demand of our people for goods.

The character and location of this idle machinery is shown in Table 16. It will be seen that it represented a capital of $6,100,860, actually invested in lands, buildings, and machinery, and exclusive of all active capital, which may be assumed to have been wiped out of existence to an equal amount, in the case of these 267 establishments which had ceased operations. The greatest number of these idle woolen mills was found in the state of Pennsylvania, where 47 establishments represented inactive plants worth $1,265,460, with 116 sets of cards and 23 combing machines; Massachusetts came next, with 43 establishments, representing plants worth $1,184,110, and New York third, with 36 establishments, representing $899,711 capital tied up in plant. The table does not indicate that this idle machinery was peculiar to any locality, but it was distributed somewhat uniformly throughout the United States, in proportion to the actual investment in the several states.

If any exception is to be made to this rule it is in the case of California, where nearly one-third of the mills in existence were idle during the census year. Twenty years ago the wool manufacture took a firm root on the Pacific coast, and for a time promised to become one of the leading industries of that part of the country, particularly in blankets of such a superior quality, that they met with a large and ready sale in the East. It also aimed to supply the local demand for the cheaper fabrics for men's wear, stimulated thereto by the high rates of freight which prevailed. The census of 1890 shows a considerable decline in the value of the woolen goods manufactured in California. The report on the internal commerce of the United States for 1890, compiled by the chief of the bureau of statistics of the Treasury Department, contains a résumé of the condition of wool manufacture in California, supplied by State Labor Commissioner Tobin, from which we make the following extract:

> The woolen industry of California is at present on the decline, and the outlook is not hopeful. Millions in capital have been invested in the business, but the return was not sufficient to warrant the operation of more than two-thirds of the mills. Various causes are assigned for this condition of affairs; and chief among them are high wages, the high price of coal, and high freight rates. It is true that all classes of manufacture labor under similar disadvantages, but the disparity between the cost of production in California and the expense of turning out the same goods in the east is particularly noticeable in this industry. The result has been that eastern manufacturers undersell the local producers, to the ruination of California trade.

In a general way each of the reasons here assigned for the decline of the wool manufacture in California may be accepted as correct. An examination of the wage tables of this report shows that the prevailing rates of that state are uniformly higher than in the east, while the difference in the cost of fuel is even greater. The condition of the industry in California is only an exaggerated instance of the fact that under the improved methods of the modern factory system the tendency of this industry to concentration has become marked, and that concentration results in certain well-defined advantages, in the direction of cheaper production, which must perpetuate that tendency.

Except in isolated cases, as in California, the idle woolen mills discovered by the Eleventh Census were old mills, whose machinery was antiquated, and whose failure was primarily due to lack of the capital necessary to equip them for competition under modern conditions. It is only a question of time before mills which are employing obsolete machinery, without the capital to renew it, must succumb to the pressure of this competition. The margin of profit has greatly decreased. Conditions are thus establishing themselves radically different from those which governed in this industry during the first seventy-five years of our existence as a nation. In respect to nearly all of these idle establishments, therefore, it may be taken for granted that they were permanently idle, except in the contingency of an entire new machinery outfit. Many of them were located upon valuable water powers, and their rehabilitation is only a question of time. A number of them have already been re-equipped and put into operation since these statistics were gathered.

The statistics of idle mills include no establishments denuded of machinery or converted to other industrial purposes. The eastern and middle states are full of buildings and sites formerly occupied by carding mills, fulling mills, and small woolen mills, which long since ceased to be considered in connection with inquiries of this character.

ALLOWANCE FOR DEPRECIATION.

In the same connection the question of the allowance for repairs and depreciation in buildings and machinery may be considered. The returns under this question presented no uniformity, and nothing approaching a uniform rule exists in the wool manufacture. The conditions governing the industry are so diverse and the methods of manufacturers so different, that it is impossible to establish any average. There are certain large establishments in New England which calculate to renew their entire machinery plant as often as every ten or fifteen years to keep themselves abreast with the most modern conditions of manufacturing. In these cases there was reported an average annual allowance of 10 per cent on the cost of plant, to cover depreciation and renewals. The average allowance reported runs from this figure down to 7 per cent, 5 per cent, 3 per cent, 2 per cent, and 1 per cent. Thus, in the state of Massachusetts, 33 establishments reported their allowance for depreciation and renewals of buildings and machinery at 2½ per cent or less, 33 reported their allowance at 5 per cent or less, 20 at 7½ per cent or less, 18 at 10 per cent or less, 4 at 12 per cent or less, and 4 at 15 per cent or more. In most of these cases the actual sum expended for new equipment during the census year was stated. Only 112 of the 336 Massachusetts establishments reporting made any return to this question, and in many mills the item does not figure in the bookkeeping. There are plenty of mills where the method is to run the machinery just as long as it will hold together. This fact is brought out in the annual report of the chief of the Massachusetts Bureau of Labor Statistics for 1890, in which the average cost of new equipment as returned to him by 141 woolen mills was 0.46 per cent, and by 17 worsted mills 0.98 per cent. These low figures could only have been obtained in consequence of the failure of a considerable proportion of the establishments reporting to make any allowance whatever for this item.

The machinery and processes of the wool manufacture are so different from those of cotton, and so complicated and numerous in comparison, that it is impossible to establish any standard, as may be done in that industry, upon which to predicate an average allowance for depreciation. But certain general principles govern the case, which will readily be admitted. The tenure of life of machinery is limited, no matter how well it may be kept in repair. In addition to the regular wear and tear, there is supersession by improvements, which is of far greater consequence, but which can not always be anticipated and which follows no fixed rule. Allowance must be made for it in considering the cost of carrying on the manufacture, and this allowance must be made even where the manufacturers themselves do not make it, if the theory is that the industry is to be carried on in the highest state of efficiency.

The average life of the entire mechanical equipment of a woolen mill is commonly estimated at twenty years, but some machines require to be replaced much more frequently than others. A set of woolen cards may last forty or fifty years with good care, but the clothing on them must be renewed every five or six years. Looms sometimes last thirty years, but their average life is less than twenty, while twenty years will represent the average life of a spinning mule. The various processes involved in the manufacture of all grades of the best woolen goods number between thirty and forty, and nearly every one of these processes requires the employment of one or more separate machines, which are subject to constant change by reason of improvements.

POWER.

The increase in the efficiency of power used in the wool manufacture has been very marked in the decade. This is shown by the following table, in which is given the total horse power, steam and water, in each branch of the industry, at each census, the average number of employés and the amount of horse power per employé. The greatest increase in power is shown to have occurred in worsted mills.

POWER AND LABOR: 1890 AND 1880.

INDUSTRIES.	Year.	Total horse power.	Average number of employés.	Horse power per employé.
Woolen goods	1890	122,224	79,351	1.54
	1880	106,507	86,504	1.23
Worsted goods	1890	49,117	43,593	1.13
	1880	16,437	18,803	0.87
Carpets	1890	22,677	29,121	0.78
	1880	10,491	20,371	0.51
Felt goods	1890	5,051	2,266	2.23
	1880	2,631	1,524	1.73
Wool hats	1890	3,295	3,592	0.92
	1880	3,992	5,470	0.73
Hosiery and knit goods	1890	34,368	61,209	0.56
	1880	11,561	28,885	0.40

Electric and other power, except steam and water, is excluded from the above table, because so large a portion of it is used for lighting. The use of electricity for power has not yet become marked. The increased use of steam, as compared with water, is the distinguishing feature of the statistics of power.

RAW MATERIALS OF THE MANUFACTURE.

WOOL CONSUMPTION.

The consumption of wool in the census year (exclusive of foreign yarns, mohair, alpaca, and other hairs) was 372,797,413 pounds, "in condition purchased", as contrasted with 296,192,229 pounds in 1880, an increase of 25.86 per cent.

It is impossible to ascertain the exact number of pounds of raw wool consumed in the industry, because it is purchased in the greasy state, in the washed state, and in the scoured state, and the figures above given represent purchases in all of these conditions.

The bulk of the domestic wools are now marketed in the greasy state. The quantity sent forward washed becomes smaller each year, and is confined largely to the clip of the middle states. The quantity of scoured wool purchased by the manufacturers is increasing steadily, as wool-scouring establishments, a comparatively new branch of the industry, increase in number and capacity. In his report of the wool manufacture for 1880, Mr. Bond said with reference to this fact: "It is estimated that from 10,000,000 to 15,000,000 pounds should be added to the domestic wool reported, and from 2,000,000 to 3,000,000 pounds to the foreign, to reach the true consumption". The habit of buying scoured wool has become more general during the last ten years, and the present special agent estimates the allowance now necessary in both domestic and foreign at 25,000,000 pounds, in order to reach the true consumption of wool as it originally came to market.

For the year 1889 the Agricultural Department places the clip at 265,000,000 pounds in the grease, including pulled wool, while the census shows that for the nearest corresponding year the wool manufacture consumed 258,680,801 pounds of domestic wool, in all conditions, a difference of but 6,319,199 pounds, which difference is not equal to one-quarter of the shrinkage represented in the washed and scoured wool purchased by the manufacturers.

Allowance must also be made for the quantity of wool annually grown which never reaches the markets, but is consumed in the household.

Again, of the mills reported as idle during the census year, a number were in operation during a portion of that year, but it was impossible to obtain any data of their operations during that limited period. They must have consumed several million pounds of domestic wool.

FOREIGN WOOL CONSUMED.

The consumption of foreign wool of all descriptions (exclusive of imported yarns) appears as 114,116,612 pounds in 1890 as compared with 73,200,698 pounds in 1880, an increase of 40,915,914 pounds, or 55.90 per cent.

The general accuracy of the census returns is attested by the statistics of the imports of foreign wool, shown in the following table, prepared by the Bureau of Statistics of the Treasury Department, which gives the imports of wool since 1870, compared with the domestic clip, and the percentage of foreign wool entered for consumption as compared with the domestic clip:

WOOL PRODUCED AND IMPORTED, DOMESTIC EXPORTS AND ANNUAL SUPPLY OF THE UNITED STATES, 1870–1890.

YEARS.	Domestic production, Department of Agriculture. (Pounds.)	Imports entered for consumption year ending June 30. (Pounds.)	Total production and imports. (Pounds.)	Domestic exports year ending June 30. (Pounds.)	Net supply. (Pounds.)	Per cent of imports to supply.
1870	162,000,000	38,634,067	200,634,067	152,892	200,481,175	19.27
1871	160,000,000	50,174,056	210,174,056	25,195	210,148,861	23.88
1872	150,000,000	94,315,933	244,315,933	140,515	244,175,418	38.63
1873	158,000,000	84,212,582	242,212,582	75,129	242,137,453	34.78
1874	170,000,000	56,793,737	226,793,737	319,600	226,474,137	25.08
1875	181,000,000	51 686,294	232,686,294	178,034	232,508,260	22.23
1876	192,000,000	40,275,678	232,275,678	104,768	232,170,910	17.35
1877	200,000,000	40,114,394	240,114,394	79,599	240,034,795	16.71
1878	208,250,000	39,801,161	248,051,161	347,854	247,703,307	16.07
1879	211,000,000	40,102,642	251,102,642	60,784	251,041,858	15.97
1880	232,500,000	99,372,440	331,872,440	191,551	331,680,889	29.9¢
1881	240,000,000	67,416,967	307,416,967	71,455	307,345,512	21.94
1882	272,000,000	63,016,769	335,016,769	116,179	334,900,590	18.80
1883	290,000,000	53,049,967	343,049,967	64,474	342,985,493	15.47
1884	300,000,000	87,703,931	387,703,931	10,393	387,693,538	22.62
1885	308,000,000	68,146,652	376,146,652	88,006	376,058,646	18.12
1886	302,000,000	107,910,549	409,910,549	146,423	409,764,126	26.33
1887	285,000,000	114,404,173	399,404,173	257,940	399,146,233	28.66
1888	269,000,000	97,231,267	366,231,267	22,164	366,209,103	26.55
1889	265,000,000	126,181,273	391,181,273	141,576	391,039,697	32.27
1890	276,000,000	109,902,105	385,902,105	231,042	385,671,063	28.50

The degree of our dependence upon a foreign wool supply is accurately ascertained from the year 1821. Prior to that time the records of the Treasury Department were not kept in a manner that permitted any definite statement regarding it. In American State Papers, Class IV, Commerce and Navigation, volume 11, appears a special report of the Secretary of the Treasury in response to a resolution of the House of Representatives, asking for a report "showing the quantity of wool imported into the United States during the years 1817, 1818, 1819, 1820, and the first three-quarters of 1821". The Secretary submitted what data he could furnish, but added that the statements were necessarily imperfect, because the duty being ad valorem, no record of weight was preserved in the custom houses. Then appear the following figures:

	ANGORA, CAMEL'S, VICUNA, ETC., FREE.		SHEEP'S WOOL (15 PER CENT).	
Years.	Pounds.	Value.	Pounds.	Value.
1817	6,600	$6,189	2,272	$1,883
1818	1,500	226	.....	.....
1819	1,700	1,407	1,192	479
1820	.....	.....	106,788	24,965
1821 (three-quarters)	2,622	2,250	384,333	93,829

After the year 1821 the record is complete, and is much more accurate than any data we possess regarding the domestic clip. The following table shows the quantity and value of all foreign wool entered for consumption from 1822 to 1890, inclusive:

IMPORTS OF FOREIGN WOOL, 1822 TO 1890 (*a*).

YEARS.	Quantity (fiscal year). (Pounds.)	Value.	Quantity (5-year periods). (Pounds.)	Value.	Quantity (10-year periods). (Pounds.)	Value.	INCREASE IN QUANTITY AND IN PER CENT. (POUNDS.) 5 years.	10 years.
1822	1,715,690	$387,312						
1823	1,673,348	340,956						
1824	1,291,400	353,367	6,736,205	$1,633,704	.....	.....	.....	.....
1825	2,055,767	552,069						
1826	2,622,909	446,768						
1827	3,180,767	379,841						
1828	2,437,018	488,831	10,200,102	1,612,260	16,936,307	$3,245,964	3,463,897	.....
1829	1,295,767	204,648					51.42 per cent.	
1830	663,641	92,172						
1831	5,619,353	1,287,540						
1832	2,814,879	561,502						
1833	273,631	93,957	15,904,169	2,955,115	.....	.....	5,704,067	.....
1834 (*b*)	.....	.....					55.92 per cent.	
1835	7,196,306	1,072,116						
1836	12,296,249	1,203,937						
1837	10,259,687	806,544						
1838	6,785,704	509,283	46,961,106	4,001,900	62,865,275	6,957,015	31,056,937	45,928,968
1839	7,806,254	662,306					195.28 per cent.	271.19 per cent.
1840	9,813,212	819,830						
1841	14,862,984	1,047,507						
1842 (*c*)	10,849,773	716,768						
1843	3,497,447	228,106	67,113,232	4,548,590	.....	.....	20,152,126	.....
1844	14,077,956	872,143					42.91 per cent.	
1845	23,825,072	1,684,066						
1846	16,504,879	1,112,978						
1847	8,249,207	524,874						
1848	11,379,483	862,675	72,651,360	5,361,468	139,764,592	9,910,058	5,538,128	76,893,317
1849	17,822,497	1,170,561					8.25 per cent.	122.32 per cent.
1850	18,695,294	1,690,380						
1851	32,578,193	3,836,613						
1852	17,992,646	1,876,536						
1853	21,403,925	2,625,761	110,198,202	13,165,013	.....	.....	37,546,842	.....
1854	20,033,492	2,792,558					51.68 per cent.	
1855	18,189,946	2,033,545						
1856	16,729,377	2,172,477						
1857	18,460,227	2,612,704						
1858	25,562,478	3,523,536	119,908,085	18,690,041	230,106,287	31,855,054	9,709,883	90,341,695
1859	33,030,112	5,084,562					8.81 per cent.	64.64 per cent.
1860	26,125,891	5,296,762						
1861	31,638,533	5,015,002						
1862	43,698,138	7,140,114						
1863	74,412,878	12,528,606	284,517,282	48,466,353	.....	.....	164,609,197	.....
1864	91,026,639	16,128,209					137.28 per cent.	
1865	43,741,094	7,654,422						
1866	70,435,943	10,682,257						
1867	37,683,675	5,779,511						
1868	24,582,551	3,955,671	206,032,175	31,098,856	490,549,457	79,565,209	78,485,107	260,443,170
1869	34,695,939	5,251,094					*d*27.59 per cent.	113.18 per cent.
1870	38,634,067	5,430,323						

a The quantities and values given are for net imports, 1822 to 1866, inclusive, and imports entered for consumption from 1867 to 1890, inclusive.
b In 1834 the exports of foreign wool exceeded the imports.
c To and including the year 1842, the fiscal year ended September 30; after that date June 30.
d Decrease.

IMPORTS OF FOREIGN WOOL, 1822 TO 1890—Continued.

YEARS.	Quantity (fiscal year). (Pounds.)	Value.	Quantity (5-year periods). (Pounds.)	Value.	Quantity (10-year periods). (Pounds.)	Value.	INCREASE IN QUANTITY AND IN PER CENT. (POUNDS.) 5 years.	10 years.
1871	50,174,056	$7,704,674						
1872	94,315,933	19,571,559						
1873	84,212,582	26,466,166	337,182,602	$69,582,888			131,150,427	
1874	56,793,737	11,611,867					63.66 per cent.	
1875	51,686,294	10,228,622						
1876	40,275,678	7,887,616						
1877	40,114,394	7,012,972						
1878	39,801,161	6,995,367	259,666,315	45,326,434	596,848,917	$114,909,322	77,516,287	106,299,460
1879	40,102,642	5,516,813					a22.99 per cent.	21.67 per cent.
1880	99,372,440	17,913,666						
1881	67,416,867	12,060,827						
1882	63,016,769	10,333,359						
1883	53,049,967	8,491,988	339,334,286	53,953,737			79,667,971	
1884	87,703,931	13,593,299					30.68 per cent.	
1885	68,146,652	9,474,264						
1886	107,910,549	13,794,213						
1887	114,404,173	16,351,370						
1888	97,231,267	14,062,100	555,629,367	77,805,485	894,963,653	131,759,222	216,295,081	298,114,736
1889	126,181,273	17,432,759					63.74 per cent.	49.95 per cent.
1890	109,902,105	16,165,043						

a Decrease.

The table shows the quantity imported by five and by ten year periods, and also the increase in quantity and the per cent of increase for both the five-year and ten-year periods over the previous periods. These percentages show remarkable fluctuations. The most rapid rate of increase in the use of foreign wool occurred in the decade ending 1840; the next greatest rate of increase occurred in the decade ending 1850, and the third in the decade ending1870. The percentage of increase in the decades ending 1880 and 1890 was small in comparison with those named.

The percentage of foreign wool entered for consumptiou in 1890 on the basis of net supply as estimated in the statement on page 29 is 28.50 per cent, and the average per cent for the whole series of years covered by the table is 24.06 per cent. This percentage indicates the degree to which we have succeeded in supplying the wants of the domestic manufacture from home-grown wool. But this is not a fair basis for such a comparison, inasmuch as the great bulk of our imports of wool are of class 3, called carpet wools, because used almost exclusively in the carpet manufacture and not grown, nor attempted to be grown, to any extent in the United States. The government classification of imported wools according to their blood has only been made since 1867, in which year the blood classification first appeared in the tariff. The figures for each subsequent year are as follows:

WOOLS ENTERED FOR CONSUMPTION IN THE UNITED STATES, 1867–1890, BY CLASS, QUANTITY, AND VALUE.

YEARS.	Total pounds.	NO. 1.—CLOTHING.		NO. 2.—COMBING.		NO. 3.—CARPET WOOLS.	
		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1867	37,683,675	1,270,356	$415,609	150,302	$31,827	36,263,017	$5,332,074
1868	24,582,551	4,681,679	918,588	1,804,272	332,315	18,096,600	2,704,768
1869	34,695,940	2,512,202	505,715	4,533,367	1,092,297	27,650,371	3,653,082
1870	38,634,067	6,530,493	1,249,152	2,752,569	765,147	29,351,005	3,416,024
1871	50,174,056	5,957,461	1,201,201	17,665,600	3,167,835	26,550,995	3,335,638
1872	94,315,933	16,871,332	4,183,960	41,155,460	8,952,131	36,289,141	6,435,468
1873	84,212,582	6,029,488	1,744,200	49,540,231	12,723,501	28,642,863	5,998,465
1874	56,793,737	2,398,216	815,307	27,087,437	6,193,150	27,308,090	4,603,410
1875	51,686,294	13,117,679	3,602,535	7,769,157	2,153,261	30,799,458	4,472,826
1876	40,275,678	8,643,366	2,187,713	3,167,307	1,153,504	28,465,005	4,546,398
1877	40,114,394	9,294,029	2,202,639	2,509,954	830,715	28,310,411	3,979,617
1878	39,801,161	9,916,012	2,431,043	3,028,869	969,683	26,856,280	3,594,640
1879	40,102,642	5,229,987	1,114,301	1,709,601	413,761	33,163,054	3,988,752
1880	99,372,440	26,785,172	6,412,273	13,266,856	3,801,730	59,320,412	7,699,663
1881	67,416,967	20,609,707	4,751,454	4,421,491	1,271,332	42,385,769	6,038,041
1882	63,016,769	13,489,923	3,042,407	2,318,671	648,252	47,208,175	6,642,699
1883	53,049,967	11,546,530	2,567,443	1,373,114	343,987	40,130,323	5,580,558
1884	87,703,931	20,703,843	4,706,665	4,474,396	1,058,758	62,525,692	7,833,936
1885	68,146,652	13,472,432	2,994,533	3,891,914	921,252	50,782,306	5,558,479
1886	107,910,549	23,321,759	4,344,189	4,872,739	1,106,116	79,716,051	8,343,908
1887	114,404,173	23,195,734	4,339,498	9,703,962	2,270,058	81,504,477	9,741,814
1888	97,231,267	16,952,513	3,648,780	5,568,068	1,322,862	74,710,686	9,090,459
1889	126,181,273	22,973,088	4,764,015	6,651,719	1,556,309	96,556,466	11,112,435
1890	109,902,105	21,387,867	4,856,640	7,662,978	1,895,535	80,851,260	9,412,866

The tables show that, exclusive of carpet wools, the needs of our manufacturers have been met by the domestic clip, for the last twenty-four years, within about 23 per cent of their total consumption. This deficiency in the domestic supply consists almost wholly of qualities of the fiber which are not grown advantageously in this country.

The question of the quantity of imported carpet wools which enter into wool manufactures other than carpets may be approximately answered by these returns, but only approximately, as the imports of no fiscal year can be taken as the exact measure of the consumption of that year.

The third class wools imported were 74,710,686 pounds in 1888, 96,556,466 pounds in 1889, and 80,851,260 pounds in 1890. Undoubtedly some of the imports of each of these years are represented in the consumption of the census year, and the average of these years, which is 84,000,000 pounds, may be taken as the equivalent of the consumption of third class wools in the census year, leaving nearly 30,000,000 pounds as the consumption of first and second class wools.

The exact part of this 84,000,000 pounds of carpet wool consumed by the carpet manufacture can not be ascertained, for the reason that many carpet mills buy their yarns from yarn manufacturers, many of whom make other products, and it is impossible therefore to trace the exact disposal of the foreign wool they consumed.

The carpet manufacture spun 54,742,234 pounds of foreign wool, and used in addition 18,763,201 pounds of woolen yarn and 10,555,799 pounds of worsted yarn in the census year. The latter was made almost wholly from foreign wool, and estimating two pounds of wool to a pound of yarn, it stands for 21,111,598 pounds of wool, thus bringing the consumption of third-class wool in the carpet manufacture up to 75,853,832 pounds, or within about 8,000,000 pounds of the total consumption of this class of wool in the census year.

There was but little foreign wool used in the manufacture of the 18,763,201 pounds of woolen yarns purchased by the carpet mills. These were mostly low-grade yarns, used in cheap carpets, and in their manufacture was consumed a large portion of the shoddy, hair, and cotton consumed in the woolen mills.

The sources of the supply of carpet wools used in the American mills are shown by the following statement from the Bureau of Statistics of the Treasury Department for the year ending June 30, 1890:

QUANTITY OF WOOL OF CLASS 3 IMPORTED AT THE THREE PRINCIPAL PORTS INTO THE UNITED STATES DURING THE YEAR ENDING JUNE 30, 1890, SHOWING COUNTRY OF PRODUCTION.

	POUNDS.
Total	80, 152, 484
Argentine Republic	13, 531, 096
Austria-Hungary	11, 977
Brazil	175, 697
Chili	1, 634, 953
China	8, 704, 983
Danish West Indies	357
Greenland, Iceland, etc	64, 104
Ecuador	1, 087
France	2, 198, 996
Germany	718, 572
England	5, 193, 817
Scotland	5, 144, 822
British West Indies	32, 793
British East Indies	6, 635, 751
East Indies (not specified)	1, 295, 723
British possessions in Australasia	21, 237
Italy	444
Dutch West Indies	14, 984
Portugal	339, 956
Russia on Baltic and White sea	3, 397, 982
Russia on Black sea	10, 594, 887
Russia, Asiatic	204. 339
Russia (not specified)	1, 362, 293
Servia	28, 381
Spain	32, 837
Switzerland	35, 685
Turkey in Europe	1, 733, 619
Turkey in Asia	12, 474, 352
Turkey in Africa	154, 826
Turkey (not specified)	94, 023
Uruguay	84, 569
Asia, all other	3, 969, 331
Country not specified	264, 011

The imports of merino wools (Class 1 of the tariff classification) have been quite steadily increasing of late years, and the average imports since the earlier years under the tariff of 1867 have been very large. The imports of combing wools show remarkable fluctuations during the earlier years of the period, but latterly they show no tendency to increase. These imports, which consist mainly of the English combing wools, have fallen off in consequence of the perfecting of the combing machine, which permits the combing of the shorter stapled merino wools in the worsted manufacture, with better results, except in special fabrics, than can be obtained from the long English combing wools.

Of the Class I wools imported and used by our manufacturers the great bulk, 77 per cent, are of Australasian production, as is shown by the table following, compiled from the Treasury reports, which gives the quantities of Class I wools imported, directly or indirectly, from each foreign country during the fiscal year 1889–1890.

QUANTITY OF CLOTHING WOOL IMPORTED AT THE THREE PRINCIPAL PORTS INTO THE UNITED STATES DURING THE YEAR ENDING JUNE 30, 1890, SHOWING COUNTRY OF PRODUCTION.

	POUNDS.
Total	15,492,107
Australasia	11,928,921
Europe	1,271,510
England	884,807
France	262,333
Spain	91,460
Turkey	24,868
Germany	7,199
Scotland	509
Russia	334
South America	1,166,890
Chile	783,575
South America—Continued.	
Argentine Republic	168,355
Uruguay	144,239
Brazil	67,981
Peru	2,740
Africa	1,105,730
British possessions	1,102,793
All others	2,937
Asia	18,056
China	10,456
Turkey	3,800
All others	3,800
West Indies	1,000

The development of wool production in the United States, while it has been on the whole rather rapid, has not been comparable with that which has been simultaneously occurring in Australasia, South America, and the Cape colonies, and has undoubtedly been somewhat retarded by the effect of the increase in these countries upon the prices of wool everywhere.

Marked and important changes have occurred in the general characteristics of our domestic supply. The rapid increase in the supply of what are known as the "territorial" wools, grown west of the Mississippi river, generally upon ranches, somewhat after the methods pursued in Australia, has had a tendency to check the increase in the clip of the finer wools that have so long been the peculiar product and glory of the middle western states. Of the staple wools now produced in the United States, we have eminent authority for saying that they "are better adapted to the fabrication of satisfactory clothing for the American people than any other wools grown". All goods which require the medium wool are admirably supplied by domestic fleeces, which are nowhere surpassed for uniform, sound, and healthy fiber. Of the superfine wools the domestic flocks now supply little to the domestic manufacture. That these wools can be grown in certain sections of this country has been amply demonstrated, as in the superfine wools of Saxon blood which formerly brought such high reputation to Washington county, Pennsylvania. That they will not be grown, in commercial quantities, is evident from the fact that these sheep are small sized, small fleeced, and comparatively unproductive, and their fleeces can not now command prices which will render them a profitable branch of sheep husbandry. The supply of fine wools of the XX and XXX grades, for which the flocks of Ohio, Michigan, and Pennsylvania have been noted, is falling steadily behind the demand, and it is to supply this deficiency that the increasing importations of Australian wools are due. The fineness, length, and soundness of staple in these Australian wools, together with their remarkable freedom from grease, render them admirable for admixture, where high-grade goods are to be manufactured. In such goods the domestic fleece is relied upon for strength and durability, and the Australian for fineness, brightness, and beauty of finish. In the somewhat circumscribed area covering a few counties in southeastern Ohio, and contiguous sections of Pennsylvania and West Virginia, a limited number of sheep may still be found producing a wool from which goods may be made fully equal in every respect to those manufactured wholly or in part from Australian fleeces.

The specific qualities of wool which enter into the manufacture of the fabrics now chiefly made in the United States were indicated by the late John L. Hayes, in 1872, in a paper prepared for the Department of Agriculture, as follows:

Common flannels involve a very important consumption of wools, from the coarsest common or native to medium merino wools; opera flannels, from fine to very finest wools; blankets, from the most ordinary Mexican to noils (the shorter or refuse fibers obtained by the process of combing the best combing wools), up to the medium merino wools; also the shorter wools of English blood, such as the down and cheviot wools. Shawls, the principal varieties, embrace all grades of merino wool up to pick-lock; some special varieties being composed of worsted combing wools; felts, generally the lowest grades of wools, but some varieties of felting, such as piano and tablo covers, medium merino wool. Knit goods, such as knit shirts, vests, skirts, drawers, cardigans, hose, involve a very important consumption of wool, from the lowest to high grades of merino, certain fancy varieties, composed of worsted yarns, requiring English combing wools. Fancy cassimeres, occupying a prominent place in the list of fabrics, require all grades of merino wool, without burr, principally medium; overcoatings, such as beavers, moscows, eskimos, medium to finest grades of merino wool. For all mixtures of wool with shoddy, the best and the longest merino wools are now regarded as the most profitable, for the reason that they "carry" more of the short fiber of the wool substitute. Thin wool coatings require from medium to the finest merino wools, fancy ladies' cloakings, the finest long merino wools, and, in some varieties, mohair, or the wool of the Angora goat; gentlemen's worsted coatings, the finest long merino combing wools. For certain varieties of delaines, coburgs, and cashmeres, ladies' dress goods, with cotton warp, medium long merino wools are used; for Caledonia ladies' cloakings, a limited use is made of mixtures of fine, long combing wools and English or Canada combing wools; for serges, moreens, alpacas, Italian cloth for linings, mohair lusters, lastings, damask for furniture,

for furniture covering, curtains and table cloths, reps for furniture and curtains, webbing for reins and girths for horses and for suspenders, bunting for flags, military sashes, picture cords and tassels, clouds or nubias, Ristoria shawls, braids and bindings, long English combing or Canada wools are required; for the warp of ingrain 2 and 3 ply carpets, the long carpet wools of Cordova and Chile, unsuited by their coarseness and unequal diameter for dress goods, are employed, the short wools for filling, and for the cheaper carpets the short and coarse Mexican and Texan wools; for Brussels and tapestry, and Brussels and velvet carpets, the long Cordova and Chile carpet wools are used for the colored yarns, the warp being of linen; for the whites or very light shades, the best English or Canada combing wools.

Returning to the consideration of the total quantity of wool consumed in the wool manufacture, we have to bear in mind that camel's hair, mohair, and alpaca are regarded in the trade as the equivalents, the first of Class 3, or carpet wools, and the others of superior grades of Class 2, or combing wools. The quantity of camel's hair and noils consumed has increased from 1,583,119 pounds in 1880 to 7,684,804 pounds in 1890, and of mohair and noils from 159,678 pounds in 1880 to 2,136,244 pounds in 1890. The alpaca has been lost in the "hair of other animals", which is in the main an adulterant, and the consumption of which has increased from 6,335,169 pounds to 16,865,764 pounds.

The tables presented take no cognizance of the quantity of wool contained in the imported yarns consumed by American manufacturers, the value of which is included in the amounts reported under the head "All other materials". The quantity of woolen and worsted yarn entered for consumption in the fiscal year ending June 30, 1890 was 3,229,777.83 pounds, valued at $1,844,849.15, foreign value, an average of 57.12 cents per pound, and may be accounted the equivalent of 9,000,000 pounds of greasy wool.

Adding these items and the 373,000,000 pounds of foreign and domestic wool in condition purchased shown in the tables, together with the 25,000,000 pounds estimated by the special agent as the allowance for the scoured wool purchased, we have an approximate consumption of 434,000,000 pounds of wool in the grease. Similar additions would need to be made to the consumption reported in 1880 to institute an exact comparison and percentage of increase.

We are thus enabled to ascertain with some degree of certainty the per capita consumption of wool in the United States for a series of decades, as shown by census statistics, and by the Treasury returns of the imports of woolen goods. In estimating the amount of raw wool contained in the latter, it is customary to calculate three pounds of wool to each dollar in value of woolen goods. On this basis we make the following table:

COMPARATIVE CONSUMPTION OF WOOL IN THE UNITED STATES.

YEARS.	Imports of wool entered for consumption year ending June 30. (Pounds.) (a)	Home production of wool year ending Jan. 1. (Pounds.)	Domestic exports. (Pounds.)	Net supply. (Pounds.)	Imports of wool manufactures, allowing 3 pounds of wool to the $1 in value. (Pounds.)	Total consumption. (Pounds.)	Per capita consumption of wool. (Pounds.)
1840	b9,813,212	35,802,114	.....	45,615,326	31,095,276	76,710,602	4.49
1850	18,695,294	52,516,969	35,898	71,176,365	58,178,613	129,354,978	5.58
1860	26,125,891	60,264,913	1,055,928	85,334,876	128,497,923	213,832,799	6.80
1870	38,634,067	162,000,000	152,892	200,481,175	105,289,422	305,770,597	7.93
1880	99,372,440	232,500,000	191,551	331,680,889	95,503,641	427,184,530	8.52
1890	109,902,105	276,000,000	231,042	385,671,063	162,496,269	548,167,332	8.75

a Quantities for 1840, 1850, and 1860 are imports less re-exports. b Year ending September 30.

This per capita consumption of wool is larger than that of any other nation on the globe. The manufacturers' consumption of wool in Great Britain is slightly in excess of that in the United States, but when the exports of manufactured wool are deducted, and proper allowance is made for imported manufactures, it is discovered that the domestic consumption of wool in Great Britain is equivalent to about 262,000,000 pounds, which is a per capita consumption of 6.9 pounds. No other country approximates Great Britain and the United States in its per capita wool consumption.

COMPARISON OF THE AMERICAN AND ENGLISH WOOL MANUFACTURE.

The preceding statistics reveal a striking disparity between the consuming capacity of woolen and worsted machinery in the United States and the corresponding capacity in Great Britain. In the latter country, according to the official returns under the "factory and workshop act", there were 6,479,252 spindles (spinning and doubling) at work in the wool manufacture in 1889, consuming, as shown by the statistics of Helmuth Schwartze & Co., 428,000,000 pounds of wool, that being the quantity of foreign and home grown wool retained for consumption in the United Kingdom in that year. This was an average consumption of about 66 pounds of raw wool per spindle. In the United States 2,986,423 woolen and worsted spindles consumed raw wool to the approximate amount, as shown above, of 434,000,000 pounds in the greasy state, an average consumption of 145 pounds per spindle.

These figures are of no value for any scientific purpose, first, because they are based upon the consumption in the grease, and second, because they take no account of the other materials, such as cotton and shoddy, which pass

over the cards and are spun with the wool. They will serve to indicate in a general way the radical difference that exists in the industry as conducted in the United States and in Great Britain.

It is the same difference that appears in the cotton industries of the two countries. It has been shown that the average consumption of cotton per spindle in the United States is more than twice the average spindle consumption in Great Britain. In other words, the identical disparity of consumption, as between the two countries, exists in both the cotton and the wool manufacture. To some degree it is attributable to the same causes in both industries. These causes, as they appear in the wool manufacture, may be summarized as follows:

(1) The bulk of the yarns spun in Great Britain are of finer counts than the bulk of the yarns spun in the United States.

(2) In the United States the woolen manufacture still largely predominates over the worsted manufacture, employing 2,329,099 spindles to 657,324 spindles in the latter. A woolen spindle, from the nature of the yarn, will consume annually at least double the quantity of wool that will be consumed by a worsted spindle. In Great Britain, on the contrary, the worsted manufacture is very nearly as large as the woolen, employing 2,402,922 spinning spindles and 669,328 doubling spindles as compared with 3,107,209 spinning spindles and 299,793 doubling spindles in the woolen manufacture. These statistics of the relative number of spindles employed in the two branches of the industry in the two countries are sufficient in themselves to explain the greater average consumption per spindle in the United States.

(3) The quantity of carpets manufactured in the United States is largely in excess of the British product of carpets, and the much coarser yarn used in this branch of the industry has an important bearing upon the question and further explains the discrepancy.

(4) A fourth cause, to which some weight must be attached, lies in the fact that the domestic wool of the United States is marketed, as a rule, in a more greasy condition than the wool consumed in the British mills. There is much more of actual wool, and less of grease and dirt, in the raw material reported as the consumption of British mills than in that consumed by our own mills. This fact should also be borne in mind in considering the per capita consumption of the people of the two countries as given above.

The above explanations of this discrepancy were submitted by the special agent to Dr. Frederick H. Bowman, of Halifax, England, the well-known expert on wool fibers, and elicited from him the following response:

WEST MOUNT, HALIFAX, September 21, 1891.

S. N. D. NORTH, Esq.,
Special Agent, Eleventh Census:

DEAR SIR: In reply to your favor of the 31st August, I have myself been struck with the same anomaly which you have noticed in regard to the very much larger quantity of wool which is used in the United States in comparison with the number of spindles as compared with the consumption of wool and the number of spindles in Great Britain. I do not think there is any doubt but that the largest portion of this increased consumption arises from the very much coarser counts which are spun on the average in the United States as compared with Great Britain, and also I think in your factories there is more waste made in proportion to the quantity of yarn turned out as compared with this country. I know this is the case very markedly in your cotton mills, and I suppose the same will probably hold good in your woolen factories. When you remember there are very large numbers of mills in this country employing a larger number of spindles, where the counts probably average 60's and upward, you will easily see that a very large number of spindles are required to turn off a very small consumption of wool (and I think the main cause of the discrepancy lies here). Possibly also your statistics may not be quite so reliable as our own, and there is undoubtedly a tendency on the part of many manufacturers to exaggerate the quantity of wool which they use, with the idea of making it appear they have a large consumption off their spindles, and this may also increase the discrepancy. Otherwise, I know of no reasons why, if the same counts are spun, you should not be able to use as small a quantity of the raw material as we do in this country.

Trusting that this reply will be satisfactory,
I remain, yours, truly,

FREDERICK H. BOWMAN.

MOHAIR.

The use of mohair, the hair of the Angora goat, is of recent date and limited extent in the United States. In 1880 the use of but 159,678 pounds was reported. In 1890 the consumption had risen to 2,136,244 pounds, valued at $848,533. These figures are singularly confirmed by the commercial statistics, the McNaughtan Company, of New York, reporting the consumption for 1891 at 2,405,538 pounds and for 1890 at 2,147,019 pounds. Of the total consumption reported for 1890, the McNaughtan Company ascertained that 1,785,173 pounds were of foreign growth and 361,846 pounds domestic. Considerable attention has recently been paid to the cultivation of this fiber in the Pacific states, and the rapid increase in its use by our manufacturers will have a tendency to further stimulate the industry. The native home of the Angora goat is the mountainous districts of Asia Minor, where soil and climate are peculiarly favorable to the growth of the long, strong, and silky fiber of the Angora. The goat has been introduced into the Cape colonies, where, mixed with the native African goat, it produces a fleece which is equal to the native mohair, and large quantities of it are now annually exported to England. Dr. Bowman, the distinguished authority on animal fibers, is of opinion that its cultivation in the United States can be successfully extended in "suitable position".

The increased consumption of this fiber is due to the increased manufacture of plush and upholstery goods and other pile fabrics, velvets, astrakhans, etc., both plain and figured, for which it is now chiefly employed. Prior

to 1880 the use of this fiber had been considerably in excess of the quantity consumed in that year, due to the popularity of the hard finished luster fabrics known as alpacas, mohairs, and brilliantines, the manufacture of which was successfully undertaken by several American mills only to be followed by the complete disuse of these goods and their disappearance from popular favor. The fiber has the aspect, feel, and luster of silk, without its suppleness. It differs materially from wool in the absence of the felting quality, and its consumption for clothing purposes has been and is likely always to be limited. Because of the stiffness of the fiber it is rarely woven alone, the warp being usually of cotton, silk, or wool. Its utilization in the machine manufacture dates only from the year 1835, and the mohair of commerce is nearly all consumed by a comparatively few manufacturers.

CAMEL'S HAIR AND NOILS.

Camel's hair is coming to play an important part in the domestic wool manufacture. The total consumption increased from 1,583,119 pounds in 1880 to 7,684,804 pounds in 1890. It is only recently that camel's hair has been utilized as a textile material for machine manufacture, and up to 1885 its employment was confined chiefly to the mixture with various low stock for backing in beavers and other similar goods, and for press bagging. In that year the Abbot worsted mills, at Graniteville, Massachusetts, began the use of camel's hair as the material for worsted yarns for carpet warp, and they succeeded in making a product so strong and perfect that its introduction followed as quickly as certain difficulties in dyeing were overcome, and the increased use of the material is confined to this product. It is difficult to sort the fine downy undercoat peculiar to camel's hair from the long coarse hair which overlies it, except by the combing process.

ALPACA.

Very little alpaca is now used in the United States, and no attempt has been made to secure a return of it. The alpaca from which this fiber is obtained, is exclusively South American, and is found in the lofty ranges of the Andes, where the llama and vicugna are the most common varieties. It is especially adapted to the use of the cotton warp, and light-weight dress goods so made are among the handsomest fabrics. In the large variety of plush and upholstery goods for which the industry has become noted in this country in very recent years these fibers play an important part, which promises to increase rapidly.

WOOL IN COMBINATION WITH OTHER FIBERS.

Wool is the one textile fiber which can be advantageously used in combination with all other fibers in the manufacture of all classes of goods. It is so used to an extent which is constantly increasing in all countries, and which adds greatly to the difficulty of a proper classification of textile establishments for census purposes. In the dress goods manufacture particularly so large a proportion of the product is made upon cotton warps with a wool or worsted filling that many establishments conduct separate departments for the manufacture of cotton yarn, which is used in the products of their worsted mills. Heretofore the statistics of these cotton departments of worsted mills have been counted as a part of the worsted industry. In the present census the returns of the cotton branch of such mills have been separately secured and they are included in the statistics of the cotton manufacture, the value of the yarns made being transferred to the wool manufacture under the head of cotton yarns purchased in the tables of materials used. The mills whose returns were thus divided between the wool and the cotton manufacture were the Arlington and Pacific, at Lawrence, Massachusetts; the Lorraine Company, at Pawtucket, Rhode Island; the Hamilton Company, at Southbridge, Massachusetts; the New Albany Woolen and Cotton Company, at New Albany, Indiana; the Mississippi Mills, at Wesson, Mississippi, and all mills making simply hosiery yarns for sale to knit goods manufacturers. In no other cases was it found possible to make this separation, and all other mills using wool and cotton together have been counted as woolen mills, and properly, as wool is always the predominating material used, in value if not in quantity.

While all textile mills may be classed according to the fiber used which predominates in value, it is obvious that this classification is open to objection, and that it becomes every year a grouping more difficult to make.

Wool is not mixed with cotton to any extent in goods which are sold as cotton goods, it being a raw material of so much greater value. On the other hand, wool is used in mixture with silk, in goods where the silk effect is retained. The use of silk threads to give brilliancy and effect to patterns is increasing in the manufacture of fine worsteds, as is shown by the employment of 244,306 pounds of silk yarn and 131,529 pounds of spun silk yarn, together valued at $1,986,402. This is the first census to show the silk consumption of the wool manufacture.

Linen is used as a warp thread in certain lines of carpets, but no longer in any species of cloths, although the fabric known as "linsey-woolsey", a wool weft woven upon a linen warp (or a cotton warp) was a staple product of the household industry in the eighteenth century and earlier. The quantity of linen yarn used in the carpet manufacture in 1890 was 10,123,816 pounds, valued at $1,621,293. Jute also appears to a limited extent in the manufacture of carpets, the total number of pounds of jute yarn reported as consumed in the year 1890 being 23,795,444 pounds, valued at $1,709,461.

Some efforts have lately been made to utilize the fiber of the ramie plant, as a suitable mixture with wool, with results that are pronounced favorable; but these efforts have not yet passed beyond the experimental stage.

COTTON IN THE WOOL MANUFACTURE.

The quantity of cotton used in the wool manufacture has increased rapidly. There passed through these mills in 1890 75,428,865 pounds of cotton, valued at $8,568,149, in comparison with 48,000,857 pounds in 1880, valued at $6,233,175. Of the quantity consumed in 1890, however, 32,432,617 pounds were for use in the hosiery and knit goods industry, chiefly in merino or pure cotton stockings and underwear.

Moreover, it will appear from an examination of the summary of goods made, included under the head of "All other products" that a very large percentage of the goods made in woolen mills are purely cotton products, and, if a strict classification were possible, they would be included in the report on cotton manufacture. This is due to the fact that many mills, in their machinery equipment, are both woolen and cotton mills, and are classified as woolen mills because the preponderance of their machinery and the bulk of their products pertain to that industry. In this respect, the wool manufacture differs from the other textile industries, a difference arising primarily out of the fact that wool is a fiber that can be worked to advantage in combination with either or all of the other fibers, and is so worked, to an increasing degree and to increasing public advantage, while cotton is never combined with wool as the predominating fiber in imparting character to the fabric, outside of hosiery and knit goods, and silk only to a comparatively limited degree. The mixed textile so called is chiefly one in which wool predominates or appears to predominate. It is because of this interchangeable use of the fibers that so many woolen mills are equipped with cotton machinery.

It appears from the analysis that products valued in the neighborhood of $3,000,000 were all cotton goods, sold as such, as, for instance, cotton yarns, cottonades, cotton jeans, cotton fire hose, cotton dusters, cotton piece goods, ginghams, cotton shirting, and other similar goods which have only found their way into the products of the wool manufacture from the impossibility of separating the cotton products of a woolen mill from its woolen products, in a census return which must take cognizance of products in connection with all the other items of the schedule of inquiry.

Cotton is used in two forms in the wool manufacture: first, as the cotton warp, and second, in the making of a merino yarn, so called, in which the cotton is mixed with the wool on the carding machine and passes into the slubbing, out of which is spun a yarn for a cheap grade of goods. Undoubtedly the development of machinery has greatly increased the manufacture and consumption of these classes of goods. The quantity made in the census year is shown in Table 4 to have been 250,931,270 square yards, valued at $87,692,047, figures which indicate that it is a means of supplying a cheap grade of goods which possess many of the advantages of woolen cloths, and are a great improvement over the all-cotton goods which were largely worn in the early days of the machine manufacture.

Cotton warp woolen goods are as old as the machine manufacture of wool. The details of the wool manufacture of 1820 show that the woolen mills of that day made an almost equal use of cotton and wool in the fabrication of the cheaper grades of cloths, chiefly satinets and jeans. Its use in lighter goods for women's wear is of comparatively modern origin, and, with the exception of hosiery and knit goods, it is in this branch of the industry that the increased use of cotton has chiefly come. The manufacture of this class of fabrics first began in France, about 1833. The English adopted the manufacture at Bradford in 1834–1835, and have since surpassed all other countries in the quality and quantity of these products. The late John L. Hayes, in the official report on wool fabrics at the Philadelphia Exposition of 1876, writes that

> No event of the century has done more for female comfort and for the industry of wool than the introduction of the cotton warp. Cotton, instead of being the rival, became the most important auxiliary of wool, and has added vastly to its consumption. These fabrics are practically the same as a woolen fabric, being so covered by wool that the presence of cotton can be observed only by the closest inspection. Their cheapness and durability make their introduction an invaluable boon to women of moderate means.

In addition to the cotton used on cards and spindles in woolen mills, there were 83,624,868 pounds of cotton yarns purchased by these mills for the manufacture of the fabrics above described, and for the hosiery and knit-goods manufacture. Only a small proportion of these yarns were consumed in other branches of the industry. The cost of these yarns was $17,985,376, which, added to the $8,568,149, the cost of raw cotton, makes $26,553,525, the value of the cotton and cotton yarns consumed in the wool industry, as against a value of $98,540,484 for the foreign and domestic wool consumed.

SHODDY AND OTHER SUBSTITUTES FOR WOOL.

In treating the raw material of the wool manufacture we come next to the substitutes, so called, which are popularly grouped under the generic name of shoddy, but which are all of them, in the scientific sense, the wastes of the original raw material.

For the first time in a census the shoddy manufacture has been investigated in connection with the wool manufacture, to which it is so intimately related as to render it practically a part of the same industry. In presenting the statistics pains have been taken not to blend them, in order that there might be accurate comparisons instituted between the returns for this and other census years. The census of 1860 was the first

which took cognizance of the shoddy manufacture as a distinct and important industry. The censuses of 1860 and 1870 presented the following statistics of the industry:

GENERAL HEADS.	1860	1870
Number of establishments	30	56
Employés	290	632
Capital	$123,500	$815,950
Wages	$54,121	$198,372
Materials	$227,925	$1,098,603
Products	$402,590	$1,768,592

The volume on manufactures, census of 1880, gave a more detailed statement of the shoddy industry, and the figures there presented are shown in comparison with those of 1890 in the following table:

COMPARATIVE STATEMENT OF SHODDY MANUFACTURE: 1880 AND 1890.

STATES.	Year.	Number of establishments.	Capital.	AVERAGE NUMBER OF EMPLOYÉS.			Total wages.	Cost of materials used.	Value of products.
				Males above 16 years.	Females above 15 years.	Children.			
Total for United States	1880	73	$1,165,100	695	496	91	$400,326	$3,366,650	$4,989,615
	1890	94	a3,754,063	1,394	867	38	856,582	6,003,035	7,887,000
Connecticut	1880	8	86,000	93	38	8	35,345	261,200	347,500
	1890	7	395,336	154	18	8	85,816	442,852	648,060
Illinois	1880	2	22,000	16	12	3	12,300	74,500	100,000
	1890	3	110,037	41	73	.....	36,254	103,722	182 110
Maine	1880	1	6,000	4	1	3	1,905	7,200	12,000
	1890	.....	.....	.....	.....	.....	.....	.....	.....
Maryland	1880	1	5,000	5	4	6	3,100	14,150	22,500
	1890	.....	.....	.....	.....	.....	.....	.....	.....
Massachusetts	1880	30	460,500	334	105	32	173,439	1,308,715	2,305,985
	1890	29	902,850	329	106	.....	180,748	1,170,868	1,614,459
New Hampshire	1880	3	17,300	13	8	2	5,700	38,900	49,600
	1890	3	23,000	25	.....	.....	11,683	86,816	111,848
New Jersey	1880	1	35,000	10	5	15	25,000	80,734	137,500
	1890	4	193,225	74	49	4	43,755	301,113	389.640
New York	1880	7	32,700	43	32	3	33,610	321,220	407,590
	1890	12	482,520	159	27	6	77,361	343,012	471,478
Ohio	1880	1	250,000	30	216	.....	40,000	575,000	700,000
	1890	3	744,530	191	485	20	182,700	1,100,480	1,377,500
Pennsylvania	1880	11	186,000	90	40	13	47,441	510,977	655,895
	1890	18	640.382	248	91	.....	151,175	1,205,258	1,633,770
Rhode Island	1880	6	49,600	51	26	6	18,590	137,054	195,045
	1890	10	194,250	143	3	.....	68,014	1,165,235	1,350,792
Vermont	1880	2	15,000	6	9	.....	3,896	37,000	56,000
	1890	.....	.....	.....	.....	.....	.....	.....	.....
All other states	1880	.....	.....	.....	.....	.....	.....	.....	.....
	1890	5	67,933	30	15	.....	19,076	83,679	107,343

a This amount does not include value of "Hired property".

Table 17 presents the statistics for the year 1890 more in detail. Many of the products of these shoddy mills are not shoddy as a raw material for other mills, but finished goods composed chiefly of shoddy. Nor was all the shoddy consumed in the census year produced in the mills which are classified as shoddy mills. The tables show the total production of these latter mills to have been 37,002,054 pounds, while the total consumption of the census year in the wool manufacture was 61,561,619 pounds, an increase of 18.02 per cent over the consumption of 1880. The difference, 24,559,565 pounds, was manufactured in the woolen mills consuming it.

The increase in the manufacture of shoddy, mungo, and similar substitutes, as shown by the tables, both as to quantity and value, has been somewhat in excess of the increase in the wool manufacture proper. This is a natural and expected result, for the reason that the use of these substitutes, with the success which has attended their utilization abroad, has only recently been thoroughly understood by American manufacturers. Shoddy was first successfully employed as a substitute for wool at Batley, in England, about the year 1813; but it was not until 1840 that its manufacture was so perfected that it became a considerable and a distinctly recognized branch of the industry.

In our own country these substitutes are chiefly consumed in the manufacture of yarns for low-grade carpets and knit goods, for horse blankets, and some of the cheaper grades of bed blankets, and also in cheap grades of satinets, cassimeres, and heavy overcoatings. The returns show that of the 61,561,619 pounds used in 1890 51,862,397 pounds were consumed in the woolen mills proper, and of the remainder nearly half, or 4,735,144 pounds, in the hosiery and knit goods mills. An analysis of the returns shows that a very considerable proportion of the 51,862,397 pounds ascribed to the woolen mills was utilized in the manufacture of carpet yarns, and would therefore be credited to that branch of the industry, if the conditions of the investigation permitted the subclassification. When due allowance is made for the increased use of these substitutes in carpets, it is found that the increased use of them in goods designed for wearing apparel has been no greater than the increased consumption of wool for the same purpose. The same remark applies to the increased consumption of cow's hair and other animal hairs which belong in the category of substitutes for wool.

Discussion of the question of the deterioration of the American wool manufacture, by reason of an increasing use of these various substitutes for wool, including cotton, arose in connection with the preliminary publication of these figures. For the purpose of exactly ascertaining the facts the following analyses of the tables have been prepared, showing the percentage of the several materials consumed in the years 1880 and 1890. From this table the statistics of hosiery and knit goods have necessarily been excluded, inasmuch as a large proportion of the products of these mills is purely a cotton product and makes no pretense of being anything else. The increased consumption of cotton in these goods can not therefore be regarded as an increase which displaces an equal amount of wool. The table is as follows:

QUANTITIES AND PERCENTAGES OF SCOURED WOOL OR ITS EQUIVALENTS, AND OF COTTON, SHODDY, ANIMAL HAIR, AND OTHER SO-CALLED ADULTERANTS OF WOOL, USED IN THE MANUFACTURE IN 1890 AND 1880.

MATERIALS.	1890 (Ponnds.)	1880 (Pounds.)	1890 (Per cent.)	1880 (Per cent.)
Total	324,259,060	252,474,545	100.00	100.00
Scoured wool, including camels hair and mohair	207,584,746	167,634,157	64.02	66.40
Cotton	42,996,248	27,869,706	13.26	11.04
Shoddy and animal hair not specified	73,678,066	56,970,682	22.72	22.56

It will be seen that the percentage of shoddy and adulterant hairs used in 1890 is almost identical with the percentage used in 1880. The comparison shows an increase of 2.22 per cent in the relative percentage of cotton consumed (exclusive of cotton yarns purchased). This increase is not surprising in view of the great decline in the cost of cotton and the enormous increase in the domestic production of cotton warp dress goods.

In a general sense, it may be said that no substitute for wool is equal to wool itself, and any use of any other material, in the wool manufacture, may therefore be called a deterioration. On the other hand, it is true that a quality of clothing can be manufactured by their use which is warm, serviceable, and attractive in appearance, and is furnished at prices which would be impossible but for the substitutes. The consequence is that since the use of these substitutes came into vogue the masses of the people have been more healthfully and more satisfactorily clothed than formerly. There is not wool enough grown in the world to supply the needs of all the people who are dependent upon it for suitable clothing, and the fact that the per capita consumption of wool in the United States is greater than in any other country may be accepted as demonstrating that our people utilize more than their full quota of the supply. The use of substitutes has permitted wool to partially take the place of cotton to a greater or less degree in many articles of apparel, and to this extent at least it is a distinct gain and advantage. This is particularly the case in stuffs intended for women's wear. More than half the cotton used in the wool manufacture is used for cotton warp threads, in goods having a wool or worsted filling, and this class of goods has largely taken the place of cotton goods, which alone were formerly available for the wear of women of limited means.

Shoddy, in its several varieties, is simply a remanufactured fiber, possessing many of its original advantages, though of course not all of them. The fiber of wool has an extraordinary capacity of endurance. Once used it may be used over and over again, not with all its original virtues, but with its warmth-imparting qualities intact. A large proportion of the shoddy consumed in this country is simply the waste of the original manufacture, saved from the loss which befell it prior to the invention of machinery which renders it fit for spinning. In carding, spinning, and weaving certain fibers become tangled, knotted, separated from the slubbing, top, or yarn, and are thrown off. This new machinery permits this waste product to be spun again. The only point at which this material is deficient, as compared with that from which it has been thrown off, is in length of staple, and this difficulty is easily overcome by admixture with new wool.

The other varieties of shoddy are now produced by powerful machines of comparatively recent date, which pull apart the woolen or worsted rags which are fed upon it and effect a gradual untwisting of the fibers. Mungo, made from hard spun or felted cloth, is necessarily of very short fiber, by reason of the tension required

to pull it apart. Wool extract is manufactured from rags into the composition of which cotton or linen has entered, and from which the vegetable fiber is removed by carbonization, and this is the least valuable variety of these restored fibers. The value of all of them is largely dependent upon the skill with which their subsequent manufacture is conducted. Some varieties of shoddy have a value, both intrinsically and in the market, greater than that of low grades of wool. The average value of the shoddy consumed in 1890, according to the census returns, was 11.26 cents, as against an average value in 1880 of 15.42 cents. The reduction in the cost of shoddy used has therefore been somewhat greater than in the cost of wool, which is not surprising in view of the fact that the machinery for the manufacture of shoddy has been very greatly improved during the past ten years and the knowledge of its proper use greatly advanced.

DYESTUFFS AND CHEMICALS.

A very large item of expenditure in the wool manufacture is that for dyestuffs and chemicals used in the preparation of materials and the finishing of goods. The census of 1880 showed a cost of $7,648,618 for dyestuffs and chemicals, while that for 1890 shows a cost of $6,453,665 exclusive of oils and soap, which are now separately reported but which were included under the general head in 1880. The corresponding total for 1890 is, therefore, $9,146,917. Both oil and soap are important chemical agencies in the manipulation of wool in the preparatory stages of its manufacture. Of oil, 4,243,618 gallons were used, valued at $1,374,049. Much of this oil was consumed for fuel and lubricating machinery, and no distinction is made of the more expensive oils used in the preparatory processes of wool manipulation. Of the 39,290,827 pounds of soap used, value, $1,319,203, the greater portion was employed in the cleansing of material and product.

The dyeing processes for woolen and worsted goods may take place in the clean stock, in the worsted top, in the yarn, or in the piece, according to the characteristics of the fabric to be made. The fancy cassimere, the high-grade carpets, dress goods, and special fabrics of other varieties of goods are made with yarns dyed in conformity with the patterns to be woven; and in large establishments, particularly carpet mills, whose assortment of patterns is extensive, large lines of colored yarns, often over a thousand shades, are kept in stock, considerably increasing the cost of manufacture.

Wool is a better recipient of dyes than either cotton or silk, and in consequence the art of dyeing has greater possibilities in this manufacture than in any other textile industry. These possibilities have been greatly developed since the introduction of the coal-tar dyes, the increased and perfected use of which has been one of the striking advances of the past decade. The most obvious result has been the almost endless multiplication of shades of coloring in all lines of fabrics, many of them of great delicacy, which has added a marvelous variety and picturesqueness to the products of the wool manufacture. The American dyers are becoming very expert in the use of the mineral dyes, and their work now compares very favorably, in the fineness and fastness of colors, with that of their European competitors. The use of the vegetable dyes has greatly diminished during the decade; but many of our best mills still adhere to them, particularly the indigo, for their best effects.

Woolen goods receive and hold colors printed on them more readily than cotton goods, and the proportion among the light fabrics which are printed is large. The figured delaines and many of the figured worsted goods, scarfs, some descriptions of shawls, felt and woolen druggets, and the tapestry carpets, carriage robes, and many of the felt skirtings are printed. The process varies little from that employed in printing silk and cotton goods. the patterns and colors being applied either by blocks or by cylinders.

EMPLOYÉS AND WAGES.

The details of labor employed and wages paid in the wool manufacture are presented with a fullness in this census never before attempted, and are contained in Tables 11–14. These tables permit an accurate subdivision of the relative earnings of all classes, in each branch of the industry, and without the misleading results which follow from averages obtained by grouping all classes, owners and managers, clerks and operatives, skilled and unskilled, pieceworkers and time workers, in any branch.

The average number of employés in the industry during the census year was 219,132, of whom 3,163 were officers and firm members employed in productive labor or in supervision. The total employés were divided into 98,446 males above 16 years of age, 105,993 females above 15 years, and 14,693 children of both sexes. The number of males employed increased 30.46 per cent, the number of females 58.64 per cent, and the number of children decreased 23.81 per cent. The greater percentage of increase in the number of females employed shows the effect of improved machinery upon the personnel of mill operatives. The tendency of these improvements is to lessen the physical exertion required in running the machinery, and thus to increase the efficiency of female labor.

The following table indicates the percentage of men, women, and children employed in the whole industry at the censuses of 1890 and 1880:

EMPLOYÉS.	Years.	Average number of employés.	Per cent of total.
Total	1890	219,132	.....
	1880	161,557	.....
Males	1890	98,446	44.93
	1880	75,459	46.71
Females	1890	105,993	48.37
	1880	66,814	41.35
Children	1890	14,693	6.70
	1880	19,284	11.94

The decrease in the number of children employed is the most striking variation in the statistics of the two censuses. It is to be attributed largely to the enactment of laws in the several states which throw greater restrictions around the employment of children. Of these children 12,948 were employed at weekly rates and 1,745 at piece rates.

By dividing the total number of operatives employed in all branches of the industry into the total amount paid for wages we have an average of $349.84, further differentiated into an average of $461.12 for men, $273.41 for women, and $155.53 for children. In the averages thus obtained are included the salaries of officers and clerks, and also the actual earnings of pieceworkers, which are frequently found to be less than the average earnings of skilled laborers, male and female.

By a similar treatment of the wages and employés reported in 1880, we have an average of $293.33, showing an apparent increase in the average earnings of all employés of 19.26 per cent in the ten years. It is impossible to make separate averages of this description for men, women, and children employed in 1880, because the wages of each class were not then separately reported. While wages have increased in the interval the increase has not been so large as the above percentage would indicate, and we are debarred, for the above reason, from any satisfactory determination of what the actual percentage of increase has been. The much smaller percentage of children now employed affords a partial explanation of the great apparent increase in average earnings. On the other hand, the percentage of men employed has decreased from 46.71 in 1880 to 44.93 in 1890, the increase in the percentage of women employed being from 41.35 to 48.37.

One explanation of the apparently excessive increase in average earnings lies in the fact that the number of officers and clerks employed is much more closely reported in 1890 than was the case in 1880. The number in 1880 was 1,810, or one in every 89 employés. In 1890 the number is 5,273, or one in every 42 employés. The increase in the number of officers and clerks reported is 191.33 per cent, while the increase in all other classes of employés is only 33.87 per cent. If we could separate the salaries paid to officers and clerks in 1880 from the wages of all other operatives, we should be able to ascertain what the actual average increase in the earnings of the latter was. At the same time the number of officers and clerks reported in either year is so small, in comparison with the whole number, as to exert but a trivial influence upon the percentage of average earnings in either case. Neither were the conditions of the industry such in 1890 that the average time employed would be greater in this year.

AVERAGE EARNINGS.

Tables 11 and 12 give the actual average earnings for each class by itself, officers and firm members, clerks and salesmen, operatives and skilled labor, unskilled labor, and finally those employed on piecework, each class divided into males, females, and children, and each class shown both for the United States and for each separate state in each branch of the industry.

These tables are therefore the proper index of average earnings, and the only proper index. They reveal the striking disparities which exist in the wages paid in the different sections of the country, and also in the different branches of the industry. Thus, in Massachusetts, the average weekly earnings of male operatives employed in the carpet manufacture were $9.11, in New Jersey $7.70, in New York $9.58, in Pennsylvania $10.29, and in Connecticut and Rhode Island $9.16. The average earnings of females show the same disparity, running from $4.36 in New Jersey, to $7.61 in Pennsylvania. In woolen mills the average weekly earnings of males of the same class in Massachusetts were $8.63, in Pennsylvania $9.04, while female operatives in Massachusetts averaged to earn $6.42, and in Pennsylvania but $5.98. These variations in the averages are affected by varying conditions, as the varying number of hours actually employed, and are not absolute averages on that account, although they are all calculated on the basis of 50 weeks' employment during the year. Still more striking disparities, known to

be in accord with the facts, appear in the similar averages for western and southern states. Thus Georgia shows average weekly earnings for males of $6.50; of females, $3.55; Indiana, males, $7.77; females, $4.34. These illustrations might be multiplied indefinitely; and each student of the tables may pursue them through all classes, in every branch, and for every state. These general deductions are established by the analysis:

(1) That the carpet manufacture pays the highest average wages to both men and women, followed closely by the worsted manufacture.

(2) That the hosiery and knitting mills pay the lowest average wages of any branch, due to the larger number of females employed.

(3) That wages in the wool manufacture are highest in Pennsylvania.

(4) That of the New England states Maine pays the lowest average wages.

(5) That wages are considerably lower in the south than in the west, and lower in the west than in the eastern and middle states.

These deductions are sustained by another analysis of the tables given below, in which appears the actual average earnings in each of the great manufacturing states, and also in typical western and southern states, of men, women, and children separated from officers and clerks, and also from pieceworkers. It would seem that these analyses present the fairest indication of the actual earnings of the mass of the operatives for the several sections. It must be borne in mind that these are average annual earnings as contrasted with average weekly wages, and represent what was actually paid out in wages for the time employed.

SUMMARY OF AVERAGE ANNUAL EARNINGS OF OPERATIVES IN THE PRINCIPAL MANUFACTURING STATES.

(NOT INCLUDING OFFICERS, FIRM MEMBERS, CLERKS, OR PIECEWORKERS.)

STATES.	Average number of employés.	Total wages.	Average annual earnings per employé.
Maine:			
Males	3,024	$1,232,171	$407.46
Females	1,661	458,070	275.78
Children	150	22,659	151.06
New Hampshire:			
Males	3,836	1,609,269	419.52
Females	3,303	984,847	298.17
Children	225	39,424	175.22
Connecticut:			
Males	6,330	2,734,741	432.03
Females	3,676	1,141,179	310.44
Children	526	92,053	175.01
Massachusetts:			
Males	20,479	8,738,479	426.70
Females	14,186	4,176,465	294.41
Children	1,689	294,799	174.54
Rhode Island:			
Males	8,702	3,804,364	437.18
Females	6,630	2,034,310	306.83
Children	1,742	285,185	163.71
Vermont:			
Males	1,146	492,698	429.93
Females	867	274,021	316.06
Children	41	6,132	149.56
New York:			
Males	12,235	5,182,350	423.57
Females	11,512	3,230,564	280.63
Children	1,952	316,910	162.35
New Jersey:			
Males	3,098	1,282,634	414.02
Females	2,781	684,605	246.17
Children	290	49,433	170.46
Pennsylvania:			
Males	17,832	$8,130,939	$455.97
Females	16,843	4,850,354	287.97
Children	4,597	724,774	157.66
Delaware:			
Males	87	34,778	399.75
Females	37	7,365	199.05
Children	39	4,426	113.49
Ohio:			
Males	656	248,966	379.52
Females	1,113	228,582	205.37
Children	196	27,987	142.79
Illinois:			
Males	697	284,908	408.76
Females	1,299	334,710	257.67
Children	69	9,811	142.19
Indiana:			
Males	903	319,357	353.66
Females	907	181,835	200.48
Children	132	12,889	97.64
Georgia:			
Males	97	25,590	263.81
Females	166	34,734	209.24
Children	71	6,835	96.27
Kentucky:			
Males	821	271,544	330.75
Females	728	167,034	229.44
Children	178	25,105	141.04

A somewhat similar differentiation of the actual earnings of males, females, and children may be made for each branch of the industry, as appears on the following page.

AVERAGE ANNUAL EARNINGS, ALL CLASSES OF EMPLOYÉS.

(NOT INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS.)

WOOLEN MILLS.			
EMPLOYÉS.	Average number of employés.	Total wages.	Average annual earnings per employé.
Total	79,351	$28,478,931	$358.90
Males	44,485	19,369,646	435.42
Females	30,240	8,400,688	277.80
Children	4,626	708,597	153.18
WORSTED MILLS.			
Total	43,593	15,880,183	364.28
Males	19,658	9,354,463	475.86
Females	20,110	5,889,096	292.84
Children	3,825	636,624	166.44
CARPET MILLS.			
Total	29,121	11,633,116	399.48
Males	14,034	7,018,483	500.11
Females	13,082	4,251,080	324.96
Children	2,005	363,553	181.32

FELT MILLS.			
EMPLOYÉS.	Average number of employés.	Total wages.	Average annual earnings per employé.
Total	2,266	$1,041,296	$459.53
Males	1,594	878,282	550.99
Females	510	135,703	266.08
Children	162	27,311	168.59
WOOL HAT MILLS.			
Total	3,592	1,363,944	379.72
Males	2,309	1,092,694	473.23
Females	1,124	252,965	225.06
Children	159	18,285	115.00
HOSIERY AND KNITTING MILLS.			
Total	61,209	18,263,272	298.38
Males	16,366	7,682,430	469.41
Females	0,927	10,049,993	245.56
Children	3,916	530,849	135.56

Rates of wages as here reported are subject in many cases to qualifications that can not be statistically shown. It is still the rule with many establishments, particularly when located in villages and smaller towns, to own tenements and houses, which are occupied by operatives at lower rents than those prevailing in the neighborhood. The boarding house for operatives, conducted by the mill proprietors and affording board at rates somewhat lower than the usual rates, still exists in connection with many mills, although it is much less frequently found than formerly.

Opportunities for overtime work are not frequent, but they sometimes occur, resulting in an increase in the average earnings, which does not appear in the tables showing weekly rates of wages.

The general conditions of labor in the wool manufacture are healthful and will compare favorably with any other industry. As a rule, the atmospheric and sanitary conditions of spinning and weaving rooms are such that the employés are subjected to no hardships from which other industries are exempt. This is particularly true of the mills of more recent construction in the New England and middle states, in which especial care has been taken to properly guard the health and comfort of the operatives. In this respect it is believed that the American woolen and worsted mills are far superior to those of any other country, and the improvement has been especially marked during the last ten years. Neither is the labor especially irksome, in comparison with that of tending machinery in other branches of manufacturing, as is shown by the general good health of the operatives employed in woolen mills. Deaths resulting from diseases in any sense peculiar to the industry, or incident to the occupation, are unknown. Accidents are not of frequent occurrence, and they are more rigidly guarded against than formerly, in consequence of the establishment of factory inspection in most of the manufacturing states and of the passage of employers' liability laws. In other respects, the lot of the operative in woolen mills has steadily improved. Until about 1870 payments were made at irregular intervals, according to the convenience of employers, sometimes monthly, sometimes quarterly; now, as a rule, they are made weekly in the eastern and middle states. All payments are now made in cash, except in a few western mills, the use of store orders having been generally abandoned since the war.

Prior to 1850 it was customary to begin work in all woolen mills as soon as it was light and to work as late as the light would allow, with no fixed regular hours. In the short days, for about six months in the year, it was customary to work until 9 in the evening, taking half an hour each for breakfast, dinner, and supper, 12 hours of work being the rule, summer and winter. For many years later the breakfast was a meal taken after an hour or more of work. About 1855, 11 hours began to be the general day's work, and this continued in most states until about 1875, when the 10-hour system came into use.

All the great manufacturing states now have ten-hour laws, differing in details in some instances, but virtually the same in their effect, with reference to the employment of women and children, which control the hours in which the machinery can be kept in operation to advantage. Since this census was taken Massachusetts has reduced the working hours of women and children by statute from 60 to 58 hours per week.

PERCENTAGE OF LABOR COST TO TOTAL COST OF MANUFACTURE.

The relation of labor cost to the total cost of manufacture can not be determined from these tables. Such a percentage is apparently secured by the simple process of adding all the items of cost and ascertaining the percentage of the total which was paid out for labor. The percentage thus obtained for this industry is 25.64; but it is not a true percentage as appears from the fact that the sum paid out for partly manufactured products, such as yarns, is a sum increased by the amount of the labor cost of manufacturing those yarns; and this labor cost has been counted but once, in the labor column, while the value of the materials has been counted twice, once as wool or cotton in the raw state and once as yarns. In other words, the methods of census compilations are such as to render it impossible to obtain from the figures a true percentage of labor cost as compared with the whole cost of manufacture. Such a percentage of labor cost, if ascertainable, would have little significance, for the reason that it is an exceedingly variable element and fluctuates in every variety of goods manufactured according to the value of the stock employed or the fineness and finish of the goods manufactured. A cheap satinet, made of low-priced stock, will for that reason show a comparatively high percentage of labor cost, while a fine worsted cloth, manufactured from costly wool, may show a percentage of labor cost no greater than that of the satinet, although the actual labor cost to manufacture a yard of the latter is double or treble the labor cost in a yard of satinet.

THE PRODUCTS OF WOOL MANUFACTURE.

The wool manufacture differs from every other textile industry in the almost endless variety of its specific products and their ever changing characteristics. It is broadly divided into six grand groups or classes, some of which have little in common with others beyond the fact that they utilize the same raw material. These six grand groups or classes are: (1) the woolen manufacture proper, (2) the worsted manufacture proper, (3) carpets, (4) felt manufactures, (5) wool hats, and (6) hosiery and knit goods. A seventh class might be added to include the shoddy manufacture, the statistics of which are here given. Each of these grand divisions is subdivided into a great variety of products, which again have little kinship with each other.

Still again, there is another class of products manufactured from wool, commonly called "small wares" in the trade, and for which there is no equivalent term in any language, the French word "passementerie" being much too limited in its significance to cover the case. The felting property of wool renders it useful in a thousand different forms which have no relationship whatever to clothing, such as materials for sheathing roofs and vessels, nonconducting envelopes for steam boilers and pipes, gun wads, polishing wheels, hammers for piano keys, and the like. Wool is manufactured in combination with all other fibers, with asbestos and India rubber, and is also utilized in the manufacture of an endless variety of braids, gimps, gorings, and similar appurtenances, which it is impossible to separately classify.

These characteristics of the industry render the grouping of its products extremely difficult for purposes of census classification. The trade names by which certain fabrics are known at one census period may stand for goods essentially different at another. For this reason these trade classifications or designations have been dropped, except as to the well-defined groups of staple goods, and a new one has been adopted, based primarily upon the composition of fabrics. This new classification furnishes a clearer conception of the nature of the industry and its products. It also supplies a more accurate basis of comparison for future census inquiries.

Only a general comparison of the products of the wool manufacture in 1880 and 1890 can be made. This was inevitable, even had the classification of 1880 been adhered to, so great have been the changes in the nature of fabrics in the interval.

Direct comparison is impossible for another reason. The products of the mills were reported at the census of 1880 in running yards; they varied in width from one-half to one and one-half yards and over, according to the nature and use of the fabric. An aggregate based upon such a variable unit of width would have been meaningless, and hence none was attempted at the census of 1880. The returns of piece goods for the present census were all reduced to square yards, and are so reported in the tables. Thus a definite knowledge of the quantity of product is secured, and an accurate basis for comparisons at future censuses obtained.

Each of the six classes of manufacture was separately reported in 1880, and is now again separately reported; so that the relative growth of each, as measured by value of products, is indicated by the tables.

CLASSIFICATION OF PRODUCTS.

In each class the use of other raw materials than wool is common to the manufacture in all countries. This is particularly true of woolen and worsted goods, the two groups in which are included nearly all the fabrics which enter into the clothing of the people. In these two groups the basis of primary classification adopted was as follows:

(1) All wool fabrics.

(2) Fabrics of cotton warp with wool filling.

(3) Fabrics composed either in warp or filling, or both, of wool, cotton, or shoddy combined, commonly known as union or merino goods.

This classification of products is as essential to a full understanding of the industry in these branches as the division into woolen goods made of carded materials, and worsted goods made of materials that have passed through the combing machine. The subdivision of the product into the different varieties of fabrics for men's and women's wear is further indicated in the tables with as close a classification as possible.

Analysis of the tables now submitted shows a total of 381,004,461 square yards of goods turned out by the woolen and worsted mills whose operations are covered by this report, subdivided as follows:

PRODUCTS.	Square yards.	Value.
Total	381,004,461	$169,409,239
All-wool goods	130,115,152	81,742,586
Cotton-warp goods	194,566,427	63,361,687
Union goods	56,322,882	24,304,966

A complete summary of all products, according to a classification contained in the schedule of inquiry and based on commercial use, is presented in the following table:

PRODUCTS.	Quantities.	Value.
Woolen, worsted, union, and cotton warp cloths, coatings, cassimeres, etc., for men's wear .....square yards..	104, 938, 311	$83, 523, 714
Woolen, worsted, union, and cotton warp overcoatings, cloakings, etc., for men's and women's wears .quare yards	14, 883, 893	13, 082, 801
Woolen, worsted, union, and cotton warp dress goods, sackings, tricots, ladies' cloth and broadcloth, alpacas, mohairs, etc., for women's wear .....square yards..	126, 692, 829	32, 149, 923
All-wool, union, and cotton warp flannels .....do....	61. 195, 501	18, 582, 549
Satinets .....do....	18, 630, 656	4, 296, 082
Linings, Italian cloths, and lastings .....do....	4, 585, 080	1, 255, 520
Jeans, kerseys, and linseys .....do....	17, 126, 217	4, 738, 034
Jersey cloth .....do....	3, 072, 533	2, 171, 328
Buntings .....do....	566, 880	135, 983
Carriage cloths .....do....	1, 282, 921	626. 791
Total piece goods .....do....	352, 974, 821	160, 562, 725
Woven shawls of wool or worsted .....do....	4, 758, 652	2, 098, 523
All-wool, union, and cottou warp hlankets .....do....	20, 793, 644	7, 153, 900
All-wool, union, and cotton warp horse blankets....do....	5, 507, 074	1, 721, 516
Carriage robes .....do....	775, 963	646, 904
Total .....do....	31, 835, 333	11, 620, 843
Woolen, worsted, and union upholstery goods .square yards.	4, 131, 288	3, 634, 133
Braids and picture cords ..... running yards..	133. 859, 751	
Ingrain carpets, 2 and 3 ply, and ingrain art carpets .....square yards..	36, 726, 379	15, 924, 452
Tapestry and body brussels, tapestry velvet, Wilton, Axminster, and Moquette carpets ..... running yards..	36, 536, 565	27, 125, 980
All other carpets .....square yards....	1, 521, 930	784. 474
Rugs of all kinds .....number..	1, 563, 803	2, 629, 781
Total value of carpets and rugs	.....	46, 464, 687
Felts .....square yards..	6, 948, 651	3, 120, 293.
Wool hats .....dozens..	1. 046, 481	5, 229. 176
All wool and union or merino yarns .....pounds..	42, 215, 173	13, 062, 970
Worsted yarns .....do....	29, 376, 182	22. 411, 363
Cotton yarn .....do....	3, 692, 936	782, 849
Wool rolls, noils, waste, and all other partly manufactured products .....do....	12, 850, 039	3, 170, 653
Total yarns and partly manufactured products	88, 134, 330	39, 433, 835.
Woolen, merino, and cotton half hose .....dozens..	7, 080, 943	7, 441, 852
Woolen, merino, and cotton hose .....do....	10, 072, 033	11, 749, 438
Merino, all-wool, and cotton shirts and drawers ....do....	6, 866, 157	33. 009, 997.
Leggings and gaiters .....do....	25, 072	85, 401
Gloves and mittens .....do....	898, 081	1, 942, 030
Hoods, scarfs, nubias, etc .....do....	342, 497	1, 476, 430
Cardigan jackets, etc .....do....	361, 478	3, 576, 248
Knit shawls .....do....	22, 990	115, 467
Fancy knit goods, wristers, etc .....do....	270, 633	759; 748
Boot and shoe linings .....yards..	7, 596, 711	1, 088, 358
Total	.....	61, 245, 169
All other products	.....	6, 457, 663
Total value of products	.....	337, 768, 524

The total value of all the products of the wool industry in 1890 is shown by these tables to be $337,768,524, exclusive of the products of shoddy mills and plants operated in penal, reformatory, and eleemosynary institutions.

GROSS AND NET VALUES.

The above value of products is accurately compiled as it appears upon the schedules returned by the manufacturers; but it is a gross value, i. e., the value at the mills of all the marketable products of those mills, whether wholly or partially manufactured, as previously explained in this report, page 21.

In the wool manufacture the chief item of duplication is the purchased yarns, and care has been taken to keep this item so separated from others that the net value of the wool manufactures of the country can be readily ascertained. Thus the value of woolen and worsted yarns purchased in 1890 was $34,631,025, and of this sum (after subtracting the duty paid value of foreign yarns imported, $3,114,930), $31,516,095, is duplicated in the column of gross value of product, and must be deducted from that total value, leaving the net value at $306,252,429. The increase in the net value of products is 21.17 per cent as compared with an increase of 26.39 per cent in gross value.

Inasmuch as the statistics of the shoddy manufacture are not included in the gross value of the products of wool mills, the total gross products of the wool manufacture should be increased by the sum of $1,975,781 (from which is to be deducted the value of woolen yarn purchased, $4,000), the value of the completed fabrics manufactured in the shoddy mills, making the total gross value of woolen products $339,740,305, and the total net value $308,224,210.

Previous censuses of the wool manufacture have failed to call attention to this duplication of products and the distinction between gross and net value of products. The same duplication occurred in all of them, and the necessity thus exists for making all the comparisons of this report on the basis of the gross value.

Prior to the census of 1870 no account was taken of yarns purchased. In the census of that year purchased yarns were reported by quantities only, values being omitted. Net values are thus only obtainable for the censuses of 1880 and 1890. In the former year 24,078,253 pounds of woolen and worsted yarns were purchased, having a value of $15,769,016, which amount, less the value of yarns imported in 1880 (635,755 pounds, valued at $1,262,489), subtracted from the gross value of products reported, $267,252,913, leaves a net value of $252,746,386 for the products of the manufacture in 1880.

The total quantities of yarns purchased in 1890, 1880, and 1870, including yarns made in other textile mills, and therefore not duplicated in the gross values of this report, are shown in the following tables, the second of which gives the comparative amount of these purchased yarns used in each branch of the industry at each period:

YARNS PURCHASED—COMPARATIVE SUMMARY.

Years.	Total pounds of yarn.	Value.
1890	*a*178,858,121	$58,467,726
1880	68,393,298	26,484,683
1870	23,524,911	Not given.

a This includes mohair, silk, jute, and linen. Without these the amount would be 143,824,249 pounds, valued at $52,616,401.

YARNS PURCHASED IN 1890.

YARNS.	TOTAL.		WOOLEN MILLS.		WORSTED MILLS.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Total	178,858,121	$58,467,726	32,175,910	$12,007,406	22,307,298	$15,347,357
Woolen	31,385,664	11,285,379	4,982,919	3,000,984	903,174	355,592
Worsted	28,813,717	23,345,646	2,560,619	2,540,667	11,551,264	11,814,625
Cotton	83,624,868	17,985,376	23,990,406	5,239,928	9,454,874	2,441,972
Mohair	738,777	534,169	324,181	297,995	232,071	212,364
Silk	244,306	1,395,176	120,571	632,545	46,138	344,556
Spun silk	131,529	591,226	69,358	281,211	19,427	127,775
Jute	23,795,444	1,709,461	125,327	13,181	.....	.....
Linen	10,123,816	1,621,293	2,529	895	100,350	50,473

YARNS.	CARPET MILLS.		FELT MILLS.		WOOL HAT MILLS.		HOSIERY AND KNITTING MILLS.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Total	80,811,257	$14,760,639	10,241	$2,019	350,000	$24,982	43,203,415	$16,325,323
Woolen	18,763,201	4,112,324	.....	.....	350,000	24,982	6,386,370	3,791,497
Worsted	10,555,799	4,711,249	.....	.....	.....	.....	4,146,035	4,279,105
Cotton	17,920,498	2,712,484	10,241	2,019	.....	.....	32,248,849	7,588,973
Mohair	182,400	23,712	.....	.....	.....	.....	125	98
Silk	.....	.....	.....	.....	.....	.....	77,597	418,075
Spun silk	.....	.....	.....	.....	.....	.....	42,744	182,240
Jute	23,670,117	1,696,280	.....	.....	.....	.....	.....	.....
Linen	9,719,242	1,504,590	.....	.....	.....	.....	301,695	65,335

Another differentiation in the industry is in the separate establishments for dyeing and finishing woolen goods. The added value imparted to product by the finishing processes of these separate establishments must be added to the figures above given to obtain a true net value. From the report on Dyeing and Finishing Textiles is obtained the following summary of these added values in wool, yarns, woolen and worsted goods, and mixed textiles:

DYEING AND FINISHING.

MATERIALS.	Quantity.	Added value.
Total		$4.017,366
Woolen yarns, dyed (pounds)	17,999,651	751,801
Worsted yarns, dyed (pounds)	9,342,157	493,974
Wool stock dyed (pounds)	1,160,666	48,828
Wool and worsted piece goods dyed (square yards)	20.779,034	652,998
Mixed textile piece goods dyed (square yards)	60,716,250	2,069,765

THE REDUCTION IN MARKET VALUES.

No exact method exists whereby the relative quantities of goods represented by the total values of products reported in 1880 and 1890 can be ascertained. The constant variations which occur in the characteristics of fabrics, and the corresponding variations in the quality and value of the raw materials utilized for their manufacture, destroy any general standards of comparison. Careful investigation of price lists covering the whole period between 1880 and 1890 determines that the fall in the value of manufactured products during that period has borne the natural relation to the fall in the value of the raw materials of which they are composed. The following table gives the average cost per scoured pound of foreign and domestic wool utilized in the wool manufacture and in each of its branches, as shown in the censuses of 1890 and 1880, and also the percentage of decrease:

AVERAGE COST OF SCOURED WOOL CONSUMED IN THE WOOL MANUFACTURE, AND IN EACH CLASS, 1890 AND 1880.

MILLS.	Quantity. (Pounds scoured.)	Cost.	Average cost per pound. (Cents.)	Per cent of decrease.
Total:				
1890	214,945,513	$98,540,484	45.84	19.34
1880	171,880,831	97,681,604	56.83	.....
Woolen mills:				
1890	100,226,094	48,859,811	48.75	20.60
1880	109,724,213	67,380,250	61.40	.....
Worsted mills:				
1890	54,989,746	28,280,287	51.43	11.10
1880	26,334,635	15,235,878	57.85	.....
Felt mills:				
1890	4.213,230	1,841,382	43.70	26.48
1880	2,733,796	1,624,871	59.44	.....
Wool hat mills:				
1890	3,018,114	1,448,799	48.00	34.69
1880	3,597,279	2,644,293	73.50	.....
Carpet mills:				
1890	35,726,837	9,855,787	27.59	6.79
1880	23,563,216	6,975,129	29.60	.....
Hosiery and knitting mills:				
1890	16,771,492	8,254,418	49.22	23.64
1880	5,927,692	3,821,183	64.46	.....
Quantity of wool "in condition purchased":				
1890	372,797,413	98,540,484	0.26	21.21
1880	296,192,229	97,681,604	0.33	.....

These average values appear abnormally low when compared with the prices of scoured wools given in current market quotations. But it is to be borne in mind that the latter quotations relate to the standard grades of wools. The enormous quantities of inferior and "unmerchantable" wools in every year's clip possess a scoured value much less than the average above indicated. The average value of the total clip of the United States in 1890, in the condition marketed, is estimated at about 26 cents in commercial quarters, and this estimate permits a shrinkage of 49 per cent to reach the average value of scoured domestic and foreign wools shown at this census. The relative

average prices as between 1880 and 1890 correspond closely with the general decline in the value of wool in the ten years, as indicated in current market quotations.

An average decline in the cost of scoured wool of 19 per cent may be assumed to mean a somewhat smaller decline in the cost of the manufactured goods. The materials constitute about one-half the cost of the manufactured goods on the average. There has been an increase in the rates of wages in this industry during the decade, but not corresponding with the fall in the cost of raw materials. On the other hand, there has been a cheapening of the cost of manufacturing through the greater efficiency of improved machinery, but not sufficient to offset these increased wages. The balancing of these shifting elements in cost results in the conclusion that the reduced cost of production in the decade is from 8 to 10 per cent, which reduced cost represents the reduction in values. Any temporary advantage which comes to manufacturers from a fall in the cost of raw materials must almost immediately be yielded in their own prices, so close has become competition in all lines of standard goods. Reckoning the fall in the value of goods as 8 per cent in the decade, the value of the products of 1890 would have been $367,139,700, on the basis of values which obtained in 1880.

NOMENCLATURE.

The fundamental terms by which the distinct fabrics of the wool manufacture are designated are simple and well defined as to their meaning, are of universal application, and are used throughout this report in their commonly accepted significance.

Other forms of nomenclature have been for the most part discarded, as tending to confuse. They are innumerable in number, and are the result of the ingenuity of manufacturers who, having devised some new style or design of fabric, seek to distinguish it in the market by affixing a novel and distinguishing name. Hundreds of such names have thus been introduced into the speech of the manufacturer, most of which disappear with the fabric to which they are applied. Other names, used to describe some radical departure from ordinary fabrics, remain and become fixtures in the nomenclature of the trade, but often with an ultimate significance different from that originally attaching to them. These names rarely have any etymological signification and are constantly reappearing in different connections.

The fundamental distinctions between different fabrics are due primarily to the method of spinning the yarns, whether woolen or worsted, and secondarily, to the weaves employed in fabrication. The primary difference in classification is subsequently explained. The classification by weave applies to the system of harnesses by which the loom is equipped for different tissues. There are four fundamental weaves, from which all other simple fabric are variations:

(1) The plain weave, which is the simplest fabric, in which but two harnesses are employed, forming a simple interlacement of the threads of the warp and weft. This is the weave of broadcloth, cotton shirtings and sheetings, and mousselines de laine. (2) The twilled weave, produced by three or more harnesses. (3) The satin weave, produced by five or more harnesses, the effect of which is to bring the threads of either the warp or the weft prominently to the face. (4) The gauze or leno weave. Different effects are produced from derivatives and combinations of these fundamental tissues. Thus, in the most simple, that of cloth or plain weave, varied effects are produced by the greater or less torsion of the threads, and the direction in which they are twisted; by variations in the size of the warp or weft compared with each other; by making the weft pass alternately over two threads and one thread of the warp, making a "rep" or corded tissue, etc. Still other variations are made by the use of different materials in the warp or weft by making them of pure wool and of a single color, or mixed with silk, mohair, etc. The four fundamental interlacements, which form the base of the most complicated tissues, are further varied by combinations of crossings of the threads which occur at variable places at each course of the thread across the web, forming figured, brocade, or damasked effects, which are produced by the jacquard loom. Another variation is made by having two warps, one to form the ground of the tissue and the other made to pass over wires to form a loop, making velvet or pile fabrics.

CLASS I—WOOLEN GOODS.

The primary group of wool manufactures, that which was first to take root in the United States, and is most intimately associated with the domestic economy of the people, is that which is called woolen goods proper, and which includes all carded wool woven fabrics, from the homespun cloth to the broadcloth, the fancy cassimere, the flannel, the blanket, etc.

The status of this branch of the manufacture at each census period since 1840 is shown in the following table:

STATISTICS OF WOOLEN MILLS: 1840–1890.

YEARS.	Number of establishments.	Capital.	Miscellaneous expenses.	Average number of employés.	Total wages.	Cost of materials used.	Value of products.
1840	1,420	$15,765,124	.....	21,342	.....	.....	$20,696,999
1850	1,559	28,118,650	.....	39,252	.....	$25,755,991	43,207,545
1860	1,260	30,862,654	.....	41,360	$9,610,254	36,586,287	61,894,986
1870	2,891	98,824,531	.....	80,053	26,877,575	96,432,601	155,405,358
1880	1,990	96,095,564	.....	86,504	25,836,392	100,845,611	160,606,721
1890	1,311	*a*130,989,940	$8,402,623	79,351	28,478,921	82,270,335	133,577,977

a This amount does not include the value of "Hired property".

The most striking fact brought out by the returns for 1890 is the decline in the market value of the products of woolen mills as compared with 1880. These products are now returned at a value of $133,577,977, and in 1880 they reached $160,606,721, a decrease of 16.83 per cent.

This decline is the result of the change from the woolen to the worsted fabric, a change forced upon the industry by the requirements of popular taste. The production of worsted mills has enormously increased, the growth being equal to 136.05 per cent. These goods have taken the place of the carded wool fabrics, which up to thirty years ago constituted the entire production of men's-wear goods in the United States.

The quantity of raw materials consumed in woolen mills was greater in 1890 than in 1880, being 200,543,253 pounds in the former year, as against 186,868,828 pounds in 1880, an increase of 13,674,425 pounds, or 7.32 per cent, as shown by the following table:

MATERIALS USED.	1890 (Pounds.)	1880 (Pounds.)
Total	200,543,253	186,868,828
Scoured wool (domestic and foreign)	100,226,094	109,724,213
Camel's hair and noils	1,781,240	1,234,064
Mohair and noils	60,533	84,080
All other animal hair	9,619,277	4,497,524
Cotton purchased	36,993,712	24,744,964
Shoddy	51,862,397	46,583,983

It follows that the quantity of products in this branch of industry was greater than in 1880, notwithstanding the decrease in value.

This analysis of the raw materials consumed in this branch of the industry demonstrates a slight deterioration in the average quality of products. While the quantity of scoured wool consumed decreased by over 9,000,000 pounds, the consumption of shoddy, cotton, and miscellaneous animal hair increased 22,648,915 pounds.

A large part of these substitutes or adulterants were consumed, not in the manufacture of cloths, but in low grade yarns for cheap carpets, in cotton products, and in horse blankets, in all of which there was a great increase of product in woolen mills.

Nevertheless it is true that the competition with worsted goods has compelled the woolen manufacture proper to cater more directly to the demand for cheaper grades of clothing material, so that the change in the character of materials used, shown above, is natural and explained by the peculiar conditions surrounding this industry. The demand for a cheap fabric exists and steadily increases, and it can only be met by the partial use of materials cheaper than wool.

WOOLEN CLOTHS.

The great branch of the woolen manufacture proper is the production of cloths for men's wear. The production of cloths of this description aggregated 112,225,297 square yards, valued at $60,258,252. In their general characteristics these cloths have changed very slightly since the beginning of the industry in the United States. There are some exceptions to this rule which are worthy of note. At the beginning of factory manufacture the woolen cloths consisted almost wholly of plain cloths, known as broadcloths; plain twilled fabrics similar in face to broadcloths, known as cassimeres and kerseymeres, and satinets. Several of the earlier mills brought the manufacture of broadcloths to a high degree of perfection. Samples are still in existence of blue and black broadcloths made at the Vassalboro mill in Maine, in 1853, from selected Silesian wool, costing, with duties and charges, about $3 a pound, and woven with 120 picks to the inch, which were conceded by experts from various countries to equal in fineness and finish the best products of the West of England mills, which had occupied in all international expositions the position of pre-eminence. It was thus made evident that in this particular fabric,

which is substantially the same to-day as when first made in the French convents four centuries ago, and which for that reason is regarded as the typical product of the industry, can be manufactured in the United States with as high degree of perfection as anywhere else, the economic conditions being equal. (*a*)

The diminution of the American broadcloth manufacture has been commonly traced to the tariff of 1846, which imposed a duty upon the fine imported Saxony wools out of which the fine grades were made, equal to the duty on the goods themselves. The decline dates from that period; but it has been greatly influenced or accelerated by other causes; the constantly diminishing domestic supply of superfine wools, the Saxon wool culture, for which there was such a craze for the fifteen years following the tariff of 1824, having long since disappeared; and the change in the popular taste, which has practically destroyed the market for broadcloths. With the introduction of fancy goods the demand for broadcloths ceased, except for special purposes. A similar although not equal diminution has occurred in the fine cloth manufacture of other countries.

SATINETS.

From the broadcloth, which represents one extreme of wool manufacture, we turn to the satinet, which is typical of the other extreme, and equally a product of the earliest American woolen mills. The total quantity of satinets produced in 1890 was 18,630,656 square yards (usually three-fourths of a yard in width), valued at $4,296,082, or an average value per square yard of 23.06 cents, or 17.29 cents per running yard. This was an increase from 16,629,116 running yards in 1880 (value not then given) to 24,840,875 running yards in 1890. The values here indicated are evidence enough that there is an abundance of cheap clothing in the United States. In the earlier part of the century the cheapest cloths having any claim to be called woolen cloths could not be made in factories for three times this cost. As a consequence the people were at that time more largely clothed in all-cotton garments than is the case to-day. But the satinet of those early days was an entirely different fabric from the present satinet, the relative cheapness having been brought about by changes in processes, and by the knowledge of how to use cheaper materials to advantage. The early satinet was a cloth made on a cotton warp with a filling spun from the ordinary grades of domestic fleeces, the waste of which was practically lost. It is that waste, combined with other renovated wastes, cotton, etc., which now constitutes the filling of the satinet. The original satinet was a plain cloth, made of dyed yarns. The present satinet is a printed fabric, in which, by the use of fast colors, an effect is obtained similar to that of the fancy cassimere. These goods will not retain the appearance nor endure the wear of all-wool goods. But in proportion to their cost they answer their purpose quite as well. Although the figures given indicate a marked increase in production, this class of goods has suffered severely of late from the competition of the cheaper grades of fancy cassimeres, and more particularly from the transient popularity of cheviot goods, so called, which are rough, openly woven woolen goods, made in black or mixed colors from coarse wool. The relative quantity of satinets manufactured is to-day much smaller than before the war.

JEANS.

Another group of goods belonging to this category is jeans, which differs from the satinet chiefly in that it is a plain fabric with a twilled weave. The quantity produced was 17,126,217 square yards, having a value of $4,738,034, which shows a somewhat higher average of value than the satinets. These goods are largely made in the west, where there are a number of mills which devote their entire machinery to turning out supplies of these goods to meet the western and southern demand for a cheap, substantial, every-day fabric.

FANCY CASSIMERES.

The predominating group of the woolen manufacture is next in order of consideration, and is the largest in the quantity and value of its products, although one of recent development. These cloths in all their varieties are commonly grouped under the name of fancy cassimeres. Their manufacture dates from the year 1836, and they have worked a practical revolution in the industry as previously conducted. In 1834, a certain M. Bonjean, a wool manufacturer of Sedan, France, devised a modification of the plain cloths hitherto universally made, by uniting upon the same stuff different tints or patterns of tissue, by the use of the jacquard loom. The goods were susceptible of as many varieties of pattern or style as the fancy might dictate, and at once became immensely popular, not only in France, but in all manufacturing nations. The beginning of their manufacture in this country is traced to Mr. Samuel Lawrence, then the agent of the Middlesex mills, at Lowell, Massachusetts, and Mr. George Crompton, the inventor of the Crompton loom. Mr. Lawrence had seen specimens of the goods, and he applied to

a Thaddeus Clapp, of Pittsfield, Massachusetts, wrote in 1877 as follows: "The first broadcloth made in this country was by Scholfield in 1804. The cloth was a gray mixed, and when finished was shown to the different merchants and offered for sale, but could find no purchasers in the village. A few weeks subsequently Josiah Bissell, a leading merchant in town, made a voyage to New York for the purpose of buying goods, and brought home two pieces of Scholfield's cloths, which were purchased for the foreign article. Scholfield was sent for to test the quality, and soon exhibited to the merchant his private marks on the same cloth which he had before rejected. In 1808 Scholfield manufactured thirteen yards of black broadcloth, which were presented to James Madison, from which his inaugural suit was made. Five merino sheep were introduced about this time in this town, and Scholfield was able to select enough to make this single piece, and President Madison was the first President who was inaugurated in American broadcloth."

Mr. Crompton to test the feasibility of constructing a loom for their manufacture, on a pattern already successfully applied in cotton fabrics. In 1840 Mr. Crompton succeeded in adapting his cotton loom to the manufacture of fancy woolens, and it was put in operation in the Middlesex mills. Up to this time no fancy woolens of any description had been woven in the United States, and here were made the first fancy cassimeres woven by power anywhere in the world. For many years afterward the hand loom continued to be solely employed for these goods in France and all foreign countries; and their manufacture, by power, progressed more rapidly here than anywhere else, although the industrial conditions at that time existing made the development exceedingly slow, as is shown by the fact that the whole amount received under the license to manufacture, given by Mr. Crompton to Phelps & Bickford, of Worcester, Massachusetts, was only $14,000 during the fourteen year term of the patent on his loom.

The new cloths were adapted to the change which had begun in our domestic wool supply. They required soundness, length, and strength of fiber, rather than the softness and fineness which had been formerly striven for in our fleeces. In the production of this class of goods many American mills gradually secured a degree of excellence which gave them a reputation beyond the limits of our own country, and at the Philadelphia Exposition of 1876 samples of domestic goods were exhibited which were favorably compared with the products of Sedan and Elbeuf in France, which centers have earned the reputation of surpassing the rest of the world in novelty of design and perfection of execution.

FLANNELS.

Important among the products of this branch of the industry, and one of the earliest and most stable, is the flannel of every variety. The flannel manufacture reached considerable dimensions under the household system of industry; and under factory methods no other fabric has been made in such quantities or used for so many purposes. It has attained an enormous development in the United States, not equaled in any other country, and for a period of more than forty years it has been enabled, except in some exceptional fancy varieties, to exclude the foreign article from the home market, an achievement equaled only in the manufacture of blankets and of bunting, and perhaps carpets. The primary cause of the successes of the flannel manufacture in the United States was assigned by John L. Hayes to "the peculiar adaptation of the American wools for this fabric". This adaptation consists in their spinning qualities, their soundness and elasticity, and their medium fineness, producing the requisite softness, without too much felting quality to cause an undue shrinking of the goods.

To this it may be added that flannel being the first stage in the manufacture of plain cloth, and from its simple character requiring a comparatively small labor expenditure, it has naturally received a great degree of attention from American manufacturers on account of the steady domestic demand for the goods. Its uses are multiform and continue to increase. The rigor of our climate created an enormous demand for flannels for underwear, a demand which has of late years been met by knitted underwear goods. As the latter have gradually superseded flannel for undergarments other uses for flannels have increased, and to-day they are in great demand for children's garments, fatigue uniforms for soldiers and policemen, and summer wear of every description.

It is a matter of record that as early as 1821 flannels were made in the state of New York by the predecessor of the present Stott mills that were pronounced equal to the best Welsh flannels. Another record is that the Groveland mill, in Massachusetts, founded in 1804 by Ezekiel Hale, made 30,000 pieces of flannel in 1823; and, in 1827, three mills in the neighborhood of Newburyport, Massachusetts, manufactured goods of this description valued at $700,000.

Of late years the American manufacture of carded wool dress goods, which are simply fancy flannels, has grown to be a distinct and creditable branch of the manufacture, and in beauty, delicacy, variety, and fastness of coloring the industry has attained a degree of perfection nowhere excelled.

The American flannel manufacturers have secured and retained the control of their home market by studying to adapt their products to the peculiar wants of our own people. In this way they have given them certain characteristics which foreign flannels do not possess. In 1835 the "Domett flannel", an original fabric, composed of a cotton warp with a filling of wool, came into use as a substitute for the linsey-woolsey stuffs, originally of household manufacture, and worn by working women for under petticoats. It shrinks but little in washing, and has persistently held its own in the interval as a characteristic domestic product. The red flannels have still a large consumption among working people, especially frontiersmen and lumbermen. About 1859 first appeared the blue flannel coating, wool-dyed, and having a three-leaved twill. This fabric, which is sheared and finished like cloth, but which nevertheless retains the lightness and pliability of the flannel cloth, is also distinctively American in origin and character.

Opera flannels, a name applied abroad to a light flannel more highly gigged and finished than the ordinary flannel, which is piece-dyed uniformly in fancy colors and hot pressed, were first introduced in this country by the Bay State mills, and their manufacture was continued at Ware, Massachusetts, by the late George H. Gilbert, about 1858, in which year he made and sold 4,000 pieces. In 1871 the same establishment made and sold 120,000 pieces of these goods, equivalent to 2,000,000 yards, and the foreign importations had by this time entirely ceased.

Still higher grades of all-wool gauze and silk-warped flannels are successfully made in this country. Flannels were exhibited at the Philadelphia Exposition having 130 picks to the inch, in which the filling yarns were spun to a length of 46,500 yards to the pound and the warps to a length of 34,500 yards.

Another variety of flannel for which the domestic manufacture is distinguished is known as the French plaid, largely used for shirts and children's garments. The present fashion has immensely stimulated the production of these goods, which are made in every variety of pattern and in every form of mixture with cotton and silk.

Of the production of the census year, 61,195,501 square yards, of the value of $18,582,549, are classified as flannels proper, and 52,785,570 square yards, value $15,821,087, as woolen dress goods, which are the fancy flannels above alluded to. We have from the two items combined an aggregate quantity of 113,981,071 square yards, which is almost equal to the quantity of cloths manufactured in woolen mills. The product of woolen dress goods above indicated may be contrasted with the 73,907,259 square yards of worsted dress goods made in the census year to determine the relative popularity of the two varieties of fabrics for women's wear.

BLANKETS.

The next group of woolen fabrics in importance is composed of blankets, which have been classified as house blankets, of which 20,793,644 square yards were manufactured, valued at $7,153,900, and horse blankets, of which 5,507,074 square yards were manufactured, valued at $1,721,516.

By the census of 1880 blankets were reported by pairs to the number of 4,000,000, including horse blankets, of value of $6,840,000, and varying in value from 60 cents to $6 per blanket, the average value per blanket being $1.71. (*a*) The increase in the blanket manufacture is greater than would appear from the difference in the value of the product on account of the excessive fall in values witnessed in this branch of the industry.

The blanket manufacture of the United States will not suffer by comparison with that of any other country, and it has long completely supplied the domestic market. The energies of the manufacturers are largely directed toward the production of the coarse and medium qualities for which there is steady demand. The competition has been so close and the product so even with the demand, if not in excess of it, that there have been many years since the close of the civil war in which the product has found a market without profit to the manufacturer. The stimulation of war prices, the large requirements of the government for the army and navy, and the exclusive possession of the home market had tempted an undue proportion of the smaller mills of the country into the blanket manufacture. They largely continued in it after the war closed, until in 1878 the glut of production became so great that the larger manufacturers found it necessary to relieve the market by an auction sale in New York. At this, the largest sale of woolen fabrics which had occurred in this country, 6,000 cases of blankets, averaging 50 pairs to a case, were sold for $717,940, at an estimated loss of $100,000 on the first cost of the goods. From the first the blanket industry has been subject to vicissitudes. Repeated efforts to establish it successfully in the earlier history of the industry were costly failures. After the tariff of 1842 went into effect the manufacture developed very rapidly until the tariff of 1846, which placed a duty of 30 per cent upon imported wools, while reducing the duty on flannels and blankets to 20 and 25 per cent. After 1857 the blanket manufacture again advanced so rapidly that by 1861 nearly the entire consumption of the country was of domestic production, as it has since continued to be.

Certain high grades of blankets, which originated with the Mission mills of California in 1858, have attained a world wide celebrity for weight, thickness, softness, and perfection of face. Advances have been made in the blanket manufacture in the last ten years in the lighter weights of finer finish. Jacquard borders of two and three colors are now a feature that adds greatly to the appearance of the goods. Many famous mills have been identified with the blanket manufacture of the United States, including older mills which long since disappeared.

SHAWLS.

The manufacture of woolen shawls was at one time an important branch of the industry, but changes in fashion have greatly reduced the output of these goods. There were 4,458,483 square yards of woolen shawls manufactured in 1890, valued at $1,955,214. These shawls were of a great variety of sizes and of qualities, and the statistics indicate nothing as to their average value beyond the fact that the bulk of the product was in cheap grades. Neither is it possible to make any comparison with the shawl production of 1880; for shawls were then returned, not in square yards, but in number, viz, 1,242,979, and no value was given. It is probable that the production did not greatly vary at the two periods.

The manufacture of all-wool plaid shawls, formerly known in this country as the "Bay State shawl", from the mill which introduced it, first assumed importance about the year 1848. Similar shawls had been made many years earlier, notably at the Watervliet mills, West Troy, New York, but upon hand looms, and the product was limited. From 1850 to the close of the civil war a number of larger mills were employed upon these goods, some of them exclusively. Prominent among these mills were the Peacedale, Watervliet, Waterloo, Middlesex, and Washington, formerly the Bay State.

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a Bulletin of the National Association of Wool Manufacturers.

The early application of the cassimere twill to this fabric, the facility with which the design is made and varied through the alternate concurrence of the warp and filling, and the ready adaptation of the medium American wools to this product, caused the domestic manufacture of woolen shawls to reach proportions, in the day of its prime, of which no adequate picture is presented by the statistics either of 1880 or 1890. The decline of this branch of the industry was hastened, not only by the popular preference for cloakings as an outside covering, but also by the introduction of the process of dyeing worsted yarns with fast colors, which led to the substitution of worsted shawls, of which there were made 300,169 square yards in 1890.

No serious attempts have been made in this country to produce the highest qualities of shawls. It is not possible, under present conditions, for machine made shawls to compete with the hand productions of the East.

CLASS II—WORSTED GOODS.

A striking feature of these statistics is the development of the worsted manufacture. It may be described in general terms as a treatment of wool after the methods of the cotton manufacture. The worsted manufacture is more complicated and expensive than the woolen manufacture, requiring more machinery of a most costly character and more skill and care in manipulation. The woolen yarn carded and spun on the mule, with few intermediate manipulations, is composed of a loose thread of tangled fibers, interlocking and criss-crossing irregularly, and lacking in tensile strength. The worsted yarn is composed of fibers of wool running parallel with each other, closely twisted into a strand which is smooth, hard, and comparatively strong. This difference between the two yarns is effected by the introduction of the combing machine and gill box, and doubling spindle mechanisms. The function of the combing machine is to lay the fibers of the wool parallel with each other, eliminating the short fibers or noils, all of which are retained in the woolen yarn. The whole process is thus fundamentally different from that of making woolen yarn. Vickerman describes worsted spinning as a series of processes continuously following each other, while woolen spinning is a compound process intermittently carried on. The worsted yarn is perfected by drafting on a series of spindles, and may be spun to a fineness of 33,600 yards, 44,800 yards, and 56,000 yards to the pound, although worsted yarns of such high numbers are rarely made in the United States.

Woven from yarns so fundamentally different, the woolen and worsted fabrics require treatment equally different in the finish, and they are easily distinguished from each other. The one is woven loose and open and is thoroughly fulled. The absence of felting from the worsted constitutes the final difference between a worsted and a woolen cloth. In the former the surface is hard and the characteristics of the weave are distinctly visible.

The worsted manufacture is of very ancient origin in England and France, but it was wholly unknown in the mills of this country until about the middle of the present century. That our wool manufacture should have been so long confined to the woolen form is one of many evidences of the primitive character of the manufacture here as compared with Europe. Very early in the century worsteds had become popular in Europe, and before our first worsted mill was constructed the manufacture nearly equaled that of woolens both in England and France.

The first attempt at the manufacture of worsted in the United States was at a mill in Ballardvale, Massachusetts, in 1843. The manufacture of delaines was here undertaken by John Marland, employing about thirty looms. The experiment extended to delaines for printing, in which the block process was used, and also to goods dyed in the piece. All the wool was combed by hand. The enterprise was not regarded as successful, largely, perhaps, because of the limited means of its projectors.

The Amoskeag mills, at Manchester, New Hampshire, was the second establishment to attempt this manufacture, and it persevered for about seven years. In 1845 the Manchester mills, in New Hampshire, built a large mill for the manufacture of delaines. At first this company used carded wool only. Their first combing machines were introduced about 1855, very shortly after they had superseded the hand comber in England. The wools used were a high grade of Ohio and Pennsylvania merino. The Manchester mills printed their own delaines from the start. All delaines had previously been printed by hand by what was known as the block machine, a slow and expensive process. At Manchester the so called Birch machine was used for a time, but the use of the cylinder for printing calicoes almost immediately suggested the similar method of printing delaines now universally in use. The original delaines made by this company were goods averaging about seven yards to the pound, and the popularity of the fabric may be inferred from the fact that the Manchester mills for years made delaines of the value of $1,000,000 per annum. The fashions changed about 1868, but printed worsteds of a somewhat lighter weight are still made at these and other mills.

The success of these pioneers brought other mills into the field. The Hamilton Woolen Company, at Southbridge, Massachusetts, soon afterward converted their mill from a woolen cloth factory into a dress goods mill, and in 1853 the Pacific mill, at Lawrence, was organized for the manufacture of the same class of fabrics. This mill also began by using carded yarn, but in 1854 it imported six combing machines of the Lister pattern, which are believed to be the first set up in this country. The Washington mills afterward followed, and made the first all-wool worsted dress goods manufactured in America.

The census of 1860 took cognizance of but three worsted mills as then in existence in the United States, the Manchester, Pacific, and Hamilton. The development of the industry from that date until the present time is shown in the following table:

STATISTICS OF WORSTED MILLS: 1860–1890.

YEARS.	Number of establishments.	Capital.	Miscellaneous expenses.	Average number of employés.	Total wages.	Cost of materials used.	Value of products.
1860	3	$3,230,000		2,378	$543,684	$2,442,775	•$3,701,378
1870	102	10,085,778		12,920	4,368,857	14,308,198	22,090,331
1880	76	20,374,043		18,803	5,683,027	22,013,628	33,549,942
1890	143	a68,085,116	$4,917,760	43,593	15,880,183	50,706 769	79,194,652

a This amount does not include value of "Hired property".

The American manufacture of worsteds received its great impetus under the operation of the reciprocity treaty with Canada, whose sheep were wholly of English blood, producing the long combing wools peculiar to those breeds, of which there were in 1860 but few grown in the United States. Of the 6,000,000 pounds of this long wool grown in Canada at that period about 4,000,000 pounds were exported to the United States, where they were converted into a great variety of fabrics then extremely popular for female wear, and just beginning to be manufactured in quantities: alpacas, brilliantines, poplins, grenadines, and similar goods to which fancy names were attached with almost every change in contexture and pattern. The same period witnessed the successful beginnings of American efforts in the manufacture of furniture goods, moreens, damasks, reps, mohairs, braids, and other goods of this class. Great improvements in combing machinery during this period stimulated these industries. The transient popularity of fabrics of alpaca, hard and lustrous, was met by the American discovery that by the use of cotton warps with a filling of combing wool an excellent substitute for alpaca could be had.

Even at this time, however, the longer stapled merino wools, from 2.5 to 3 inches in length, were being combed for making delaines and similar fabrics. Other changes and improvements in combing machinery came into use, the fashion for bright goods waned, the development of the worsted suiting industry came on, and it supplied itself with combing wools of merino blood. The reign of the long combing fleeces was over, and they began to fall in value as rapidly as they had risen. The effect of these mutations in the industry upon that class of wools may be judged from the London quotations of Lincoln wool, which fell from 25.75 pence in 1865, a price which it reached again in 1872, to 10 pence in 1890.

Between 1860 and 1870 the number of establishments manufacturing worsted goods increased from 3 to 102, the capital from $3,230,000 to $10,085,778, the operatives from 2,378 to 12,920, and the value of products from $3,701,378 to $22,090,331. The decade from 1870 to 1880 showed the number of worsted manufactories reduced to 76, but the amount of capital employed doubled, and the market value of the products increased from $22,090,331 to $33,549,942.

The decade now under consideration shows a ratio of gain greater than any other. The number of mills just about doubled, the capital increased more than three times, the total number of employés more than doubled, and the value of the products increased 136.05 per cent. While the relative importance of the worsted industry in this country is not yet as great as in either England or France, it is nevertheless clear that this is the department of wool manufacture for which the future holds the greatest promise.

DRESS GOODS FOR WOMEN'S WEAR.

The sketch above given indicates that the worsted manufacture was confined for many years to the making of the light-weight goods for female wear, commonly grouped under the name of "stuffs" or dress goods, except as to the manufacture of coarser worsted yarns for use in the carpet industry. All the products of this general class are grouped under this one head as the only practicable classification where there exists such a multitude of names and varieties of fabrics. The census of 1890 shows the manufacture of 73,907,259 square yards of goods of this general character, having a total value of $16,328,836. The quantity of running yards manufactured in 1880 was 75,109,225. An increase in quantity occurred, as the great bulk of the dress goods are manufactured in narrow widths, running from 26 up to 54 inches, but averaging perhaps somewhere between 30 and 40 inches. The increase in the manufacture of suitings for men's wear has, however, been much greater, both in value and quantity.

One explanation of this fact is found in the enormous quantities of dress goods imported into this country of late years. The following table, prepared from the Treasury Department reports, shows approximately the quantity of this class of imported goods consumed by the American people since 1867:

IMPORTS OF DRESS GOODS ENTERED FOR CONSUMPTION: 1867–1890.

[Goods weighing over 4 ounces per square yard estimated at 4.5 ounces to the square yard.]

YEARS.	Square yards.	Foreign value.	YEARS.	Square yards.	Foreign value.
1867	68,845,745	$20,356,635	1879	54,982,153	$14,365,255
1868	67,035,850	16,868,362	1880	67,986,246	16,752,068
1869	68,941,611	18,280,490	1881	61,990,172	15,961,066
1870	68,417,235	18,044,982	1882	93,772,856	19,070,817
1871	80,857,310	21,651,423	1883	93,920,152	22.619,106
1872	81,213,343	24,071,832	1884	63,831,494	15,349,097
1873	75,696,005	23,119,442	1885	61,491,520	14,197,987
1874	73,489,162	22,363,759	1886	67,346,150	14,971,277
1875	77,926,496	22,330,018	1887	76,871,189	17,199,141
1876	60,234,205	16,555,100	1888	85,504,490	18,742,493
1877	52,912,741	14,111,843	1889	93,261,526	19,793,253
1878	53,902,154	14,164,130	1890	107,915,289	22,668,293

When to the quantity given for 1890 in this table we add the 73,907,259 square yards of domestic manufacture, we have the enormous total of 181,822,548 square yards. Of the imports above given the great bulk were of so called worsted dress goods (but including linings and Italian cloths, by reason of the tariff classification). Adding to the above total the carded wool dress goods manufactured in the United States we again increase our total to 234,608,118 square yards of material manufactured at home and abroad for the clothing of American women.

These statistics show that the imported supply of worsted dress goods and linings is considerably in excess of the domestic manufacture, which is true of no other branch of the wool manufacture. This class of goods constituted in 1889 about 37 per cent of the total imports of woolen goods of every class and description. The foreign value of these imported dress goods in 1890 was $22,668,293, and their duty-paid value was $39,159,241, as against a value of $15,821,087 of domestic wool dress goods, $16,328,836 of domestic worsted goods, and $1,255,520 of domestic Italian cloths, linings, etc., the total value of the kindred domestic productions being $33,405,443, showing that the duty paid value of the import of these goods exceeded the mill value of the domestic production of similar goods by the sum of $5,753,798.

The imports of dress goods are separately classified as part wool or cotton warp goods and all-wool goods. The average foreign value of the cotton warp dress goods imported in 1890 was 20 cents per square yard, their duty paid value 33 cents. The average foreign value of the all-wool dress goods imported was 20 cents per square yard, and their average duty paid value 38 cents per square yard. The average value at the mill of the domestic products in worsted dress goods in 1890 was 22 cents, which maintains a striking relationship to the average foreign value of the imported competing goods, and is 16 cents less than the average duty paid value of these goods. The American manufacturers have of late years practically supplied the home market for the cheaper grades of mixed dress goods. The importations of these grades consist largely of novelties, in the production of which the Bradford manufacturers are particularly expert.

The further analysis of the domestic production of worsted dress goods divides them into 11,349,319 square yards of all-wool goods, valued at $3,905,398, an average value per square yard of 34.41 cents; and 62,557,940 square yards of cotton warp or mixed dress goods, valued at $12,423,438, an average value of 19.86 cents per square yard. It is clear, therefore, that the domestic production of all-wool dress goods does not yet equal one-sixth of the average annual consumption of the American people.

But even this proportion indicates a very decided gain, which was almost wholly secured within the decade between 1880 and 1890. It was not until a few years ago that our manufacturers ventured to attempt this manufacture, except experimentally, the trial usually demonstrating the impossibility of competing to advantage with the French in a field which they have made peculiarly their own and in which they meet with only desultory competition from the manufacturers of other European nations. The products of their mills are recognized throughout the world as inimitable, so far as artistic pattern and dyeing are concerned, and exhibit a perfection of finish which stamps them as the most perfect fabrics in the whole range of the textile industry.

In entering this field American manufacturers have had to contend with the strong popular prejudice in favor of the French goods, and with the problem of reconciling prices with much greater labor cost. The proportion of labor cost increases in an inverse ratio as the size of the yarn becomes finer. Thus the operative who can spin 60 pounds a day of the yarns known as 40's is reduced in his production to say 30 pounds when spinning 60's, and to 15 pounds if he spins 80's. The capacity of the machinery is reduced in the same manner. That is to say, there will be twice as many yards of yarn to a pound for 40's as for 20's, and as each yard has more turns of twist

per inch in 40's than in 20's the production per frame in pounds is much smaller for 40's than for 20's. Considerations of this character are of prime importance in determining the question whether we are likely to succeed in domesticating the important industry of fine all-wool dress goods. In the meanwhile the census of 1890 shows remarkable progress in this direction, a progress which has since become even more marked. The goods of this description made by several of our leading worsted mills reveal a taste in their conception and a care and delicacy in their finish which permits them to sell in the markets side by side with the French stuffs.

WORSTED GOODS FOR MEN'S WEAR.

This report has thus far spoken only of the history and statistics of the worsted manufactures of the United States in their relation to the lighter fabrics adapted to women's wear. The development of the other branch did not begin until more than twenty years later, but so rapid has been its progress that in 1890 the value of its products was nearly double the value of the products of the dress goods mills.

There is some confusion as to the exact time and place when and where this manufacture began in the United States. Mr. John L. Hayes is authority for the statement that the first merino worsted coatings made in the United States were turned out by the Washington mills in 1870, under the inspiration of the late E. R. Mudge, who had been a United States commissioner to the Paris Exposition of 1867, and had been much impressed with specimens of these goods of French origin there exhibited. On the other hand, it is equally certain that similar fabrics were made at the same time by the Hockanum Company, at Rockville, Connecticut, and the Wanskuck mills in Rhode Island also commenced the manufacture of worsteds about 1870.

Mr. Henry G. Kittredge, the editor of the Boston Journal of Commerce, writes as follows on this point:

> From the treasurer's annual report to the Washington mills' stockholders, December 24, 1868, we learn that in 1864 two combing machines, with necessary preparing and spinning machinery, were purchased for making worsted yarns. With this machinery the mills experimented on various fabrics with more or less success until 1868, when, in the words of the report, "an article of very general utility was perfected" for which new worsted machinery was bought, also looms of new and improved construction for the manufacture of goods which had been before wholly imported, thus diversifying the product of the mills and adding one more and a very important branch to American industry. We have indisputable evidence that about the middle of 1869 light-weight (12 oz.) worsteds were being manufactured in quantity, made from 2-60 yarn for warp and filling. It was not till the latter part of 1870, or the early part of 1871, that heavy weights were begun to be manufactured by these mills.

It was many years before our manufacturers began to seriously compete with foreigners in this class of goods. The expensive machinery required to manufacture the yarns employed was one obstacle in the way of a more rapid development, and another was the tariff discrimination in the act of 1883 against this class of goods. The tariff of that year, like all previous tariffs, was apparently arranged on the theory that the worsted manufacture was confined to "stuff" goods, so called, for women's wear, to which it was wholly limited prior to 1870. Worsted cloths were entered at rates of duty so much lower than those applied to cloths made of carded wool that the domestic market was chiefly supplied from foreign mills. The development of the worsted industry was retarded by these conditions; but the popularity of these fabrics increased so rapidly that many mills adapted their machinery to its production. The former fancy cassimere makers especially were ready to adopt a fabric which was well adapted to their looms and required but little change in their machinery beyond the substitution of combs for cards. But in most cases they purchased their worsted yarns from the great combing and spinning establishments which sprang up. The making of worsted cloths thus practically became an adjunct, not of the original worsted industry, but of the woolen cloth manufacture.

It is worthy of note that the first important movement toward the specialization of the wool manufacture in this country, after the method which distinguishes it in France and England, dates from the introduction of the worsted cloth manufacture, and about the year 1870. Up to that period the worsted manufacture had been chiefly carried on in mills possessing all the appurtenances necessary to turn out the completed product from the raw wool to the finished goods. It is true there existed a few mills prior to this date engaged solely in yarn spinning, and particularly carpet, zephyr, and hosiery yarns. But the real development of worsted spinning as a separate industry has occurred since 1870.

The quantity of worsted cloths of all descriptions produced during the census year was 28,469,887 square yards, valued at $32,299,578, as compared with 5,726,994 running yards produced in 1880, and reported in the census of that year under the heads of coatings, suitings, and overcoatings among the products of both worsted and woolen mills. These figures show how enormous has been the increase in the consumption of this class of goods. The quantity is still, however, much smaller than the production of woolen cloths for similar wear, which was 127,109,190 square yards.

BUNTING.

Up to the close of the civil war all the bunting used in the United States was manufactured in England, where it was made of the long combing wools peculiar to that country. In 1865 the United States Bunting Company was organized at Lowell, Massachusetts, and at once successfully achieved the manufacture of this important fabric; and this establishment, together with the New England Bunting Company, located in the same city, now supply practically all of this material used in the United States. They have shown great skill, not only in the manufacture of the materials of which our national flags are made, but also in the construction of the flags themselves.

The total quantity of bunting made in 1890 was 566,880 square yards, valued at $135,983. Practically the whole of this production was used for flags.

The census of 1880 reported 2,230,221 running yards of bunting manufactured in worsted mills in that year and 355,000 running yards manufactured in woolen mills. In explanation of these larger figures it may be said that at the time the census of 1880 was taken a material known as bunting was very popular as a wearing apparel for women, and the great bulk of the product reported was used for that purpose. The fashion then in vogue no longer obtains, or, if there is still a limited quantity of the fabric made for this purpose, it is now included in the worsted dress-goods products of 1890.

WORSTED BRAIDS.

The manufacture of worsted braids in this country was successfully established in 1861, at Pawtucket, Rhode Island, by the late Darius Goff, who began with six braiding machines. Experimental efforts had preceded Mr. Goff's venture, but his was the first establishment to persist in the enterprise until it was crowned with success. The machines for braiding in use in this and other mills were of American invention, made expressly for the purpose, and they were great improvements over those then employed in England, being much simpler and requiring about half the power to operate them.

The quantity of braids and braiding is reported in running yards. The quantity and value of these goods, the location of the establishments making them, and the number of braiding machines employed are shown in the following table:

STATES.	Number of establishments.	Yards.	Value.	Number of braiders.
Total	11	104,205,251	$1,264,622	.....
Massachusetts	2	20,085,888	266,001	2,400
New York	3	26,537,240	338,000	4,300
Rhode Island	5	40,856,750	545,249	4,050
Pennsylvania	1	16,725,373	115,372	.....

In 1880, braids were reported by dozens of pieces to the number of 2,612,691 dozens. The increase in the production has been enormous in the ten years, and the domestic market is practically supplied by the home product.

PLUSHES AND PILE FABRICS.

An important branch of the worsted manufacture, the manufacture of mohair plushes and other similar pile fabrics for upholstery purposes, has been successfully established in this country since the census of 1880 was taken. Three mills were equipped for this specialty very nearly contemporaneously about 1882, that of the Tingue Manufacturing Company, at Seymour, Connecticut; D. Goff & Sons, at Pawtucket, Rhode Island, and the Goodell Brothers, of the Sanford Mills, in Maine, who established the manufacture of plush carriage robes and velours in this country in 1867. Great embarrassments attended the establishment of the upholstery plush manufacture in this country on account of the difficulty in obtaining the proper weaving machinery. The manufacture of mohair plushes was confined at that time to France and Germany, where the peculiar looms employed were kept under the closest surveillance. Repeated attempts to procure this machinery abroad were baffled, and the result was the invention of American patterns, of which different mechanisms were evolved by each of the establishments named. Mr. Goff's loom, originally based upon an English patent, was finally, after five years of experiment, perfected on an entirely novel plan, and these looms now produce a fabric in every way equal to the best plushes made abroad, and with much greater economy of labor. The product of these and other mills is now sufficient to practically supply the domestic market, which is very large, not less than 3,500 railway cars being annually upholstered with their goods.

The success of the experiment in plush manufacturing has been followed by an extraordinary development in the production of a great variety of pile fabrics and kindred goods for upholstery and house decoration purposes. The artistic element has had ample field for play in these products, and the evidences of originality and the power to create striking effects which are shown in many of these goods have brought the American textile manufacture suddenly and favorably into the notice of the world. This has been particularly the case in what are known as chenille goods, largely used for household decoration. Cotton is the fiber chiefly used in these goods, and with a few exceptions they have been returned to the census under that branch of manufacture. Silk and worsted are used to a large extent in the making of the higher grades of these fabrics, and the manufacture has grown so rapidly since 1880 that it may hereafter be properly recognized as a distinct branch of the textiles, to be separately treated, and one which holds out the highest promise and opportunity for the future.

CLASS III—CARPETS.

The manufacture of carpets is regarded as the most characteristic branch of the textile industries of the United States. Two causes have contributed to the unique development of this branch of the wool manufacture.

One was the extraordinary contribution of American invention to the mechanism of carpet manufacture, exceeding in value and importance those of all other nations combined. Another is the general prosperity of our people and the high wages earned, permitting families in all grades of life to indulge in the luxury of floor coverings, and creating a large and lucrative market.

In this respect mechanical manufacturing has effected a great change in the comfort and habits of our people. Up to the middle of the last century a carpet was a curiosity even in the homes of the wealthy. Such as existed were chiefly of the variety known as rag carpets, made then as now in the family. The first carpet manufactory of whose existence in this country there is any record was established in Philadelphia in 1791 by William Peter Sprague. The census of 1820 reported small quantities of wool carpeting woven by hand at Newport, Rhode Island, in Queens county, New York, and in Frederick county, Maryland, but this was presumably rag carpeting. In 1825, Alexander Wright, a native of Scotland, started a small carpet mill at Medway, Massachusetts, which he operated for a time with hand looms brought from Scotland. After passing through several hands the mill and machinery were sold in 1825 to the Lowell Manufacturing Company, then recently organized for the manufacture of carpets and cotton goods, and when the Lowell mill was completed the machinery was removed to that city. The origin of that great establishment is thus definitely fixed. Very shortly the Lowell Company was running 70 carpet looms, and producing weekly 2,500 yards of ingrain, brussels, and other carpeting, and 150 rugs. The census of 1860 records that in 1830 a manufactory of imitation brussels and ingrain carpets was started at Carlisle, Pennsylvania; that in 1833 there were three carpet mills in operation in Columbia county, New York, and large mills at New Haven, Connecticut, and Norwich, Connecticut, and that by 1834 there were in operation at least 511 hand carpet looms in from 18 to 20 mills. Upon these looms were made annually 21,600 yards of brussels, 31,500 yards of 3-ply ingrain, 954,000 yards of other ingrain, 132,000 yards of venetian, and 8,400 yards of damask venetian, a total of 1,147,500 yards, having an average value of $1 a yard. This production has since multiplied more than 70 times. At the same time many families were supplying themselves with rag carpeting made at home, and the quantity of rag carpets made in the household for sale was much greater than at present.

Mr. Hayes wrote that it was within his personal recollection that at about the same time the manufacture of ingrain carpets was undertaken at Great Falls, in New Hampshire, by power, the apparatus for making the figure automatically being a large cylinder or drum, upon which pins or blocks were placed corresponding to the pattern to be woven, the cylinder operating like that of a music box. This apparatus was also used at Little Falls, in New Jersey. This, as well as other automatic devices elsewhere tried, was finally abandoned, as operating less favorably than the hand loom. In 1844 the hand loom, both in Europe and this country, was universally used for making carpets.

The real development of our carpet industry dates from the successful application of power to the carpet loom, as the result of experiments and inventions made by Erastus B. Bigelow, of Boston, Massachusetts. Many improvements had in the meanwhile been made in the hand loom, and several patents were issued to manufacturing American inventors. Up to the time when Mr. Bigelow succeeded in making the carpet loom automatic the English machinery was superior to our own, and the jealousy with which it was guarded made it impossible for American manufacturers to equal the carpets then imported from England in much larger quantities, relatively, than has since been the case.

In co-operation with Mr. George W. Lyman, treasurer of the Lowell Company, who supplied the funds, Mr. Bigelow worked out the device he had conceived, and by 1844 the successful weaving of ingrain carpets by power had been achieved at Lowell. From that point the history of the ingrain carpet manufacture in this country has been a record of constantly extending development. The Hartford Carpet Company, next to the Lowell the earliest organized of our large carpet manufactories, at once adopted Mr. Bigelow's invention under arrangements with the patentees, and other establishments followed suit.

Mr. Bigelow next devoted his energies to the invention of power looms for weaving jacquard brussels and wilton carpets. The results of his labors being offered to the Lowell Company and not accepted, Mr. Bigelow established a factory of his own at Clinton, Massachusetts, which was organized into the Bigelow Carpet Company in 1854, and became the largest establishment in the world, uniting under one management all the processes of spinning, dyeing, and weaving jacquard brussels, and wilton carpets. The supplemental report of the jury at the London Exposition of 1851 declared that the specimens of these classes of carpets exhibited by Mr. Bigelow were "better and more perfectly woven than any hand loom carpets that had ever come under the notice of the jury". This, however, was but a small part of their merit, or rather that of Mr. Bigelow, "who has completely triumphed over the numerous obstacles that presented themselves, and succeeded in substituting steam power for manual labor in the manufacture of five frame brussels carpets".

English manufacturers were quick to appreciate the importance of this invention, and an arrangement was made by Crossley & Sons for placing the new looms in their immense establishment at Halifax. Subsequently

this company purchased Mr. Bigelow's patent rights for the whole of the United Kingdom. The right to use his patents was sold to a few mills in the United States, and until their expiration the manufacture of these particular carpets was confined to these mills.

Still another of Mr. Bigelow's inventions was for weaving tapestry carpets, so called. This style of carpet, known both as tapestry brussels and tapestry velvet, of comparatively recent invention, is now extensively manufactured both in England and the United States. It is particularly adapted to meet the demand for brilliant effects at popular prices; for there is no form of carpet where so handsome an appearance can be secured at so low a cost. In all other carpets the yarns are dyed, and the process of arranging these many colored yarns for the loom, to work out an elaborate pattern, is slow and expensive. In the tapestry carpet the colors are printed upon the warp threads in such a manner that when the warps are woven they form the desired figure. The room for the application of color and design is therefore unlimited. This method of printing the warps, originally invented by a Scotchman about 1832, was perfected by John Crossley, of Halifax, in 1842. It was first undertaken in this country by John Johnson, at Newark, New Jersey, in 1846, with 25 hand looms. This establishment was subsequently removed to Roxbury, Massachusetts, where the inventive genius of Michael M. Simpson brought the manufacture to the highest state of efficiency. A number of our largest carpet mills are now employed in the manufacture of tapestries. The progress made in this manufacture is attested by certain records kept by the Roxbury Company. The product of the first hand looms was but 5 yards per loom per day. In 1856 the product of each power loom in these mills was 16 yards. In 1876 the average product of each of 114 looms was 49.5 yards per day, and this average has since been slightly increased.

The American manufacture of Axminster carpets, the most luxurious carpet that comes from the power loom, and previously manufactured only in France and England on hand looms, dates only from the year 1867. A patent for weaving these carpets by power was awarded to Alexander Smith and Halcyon Skinner in 1856; but the destruction of their factory by fire, and other obstacles, prevented its utilization until 1867, since which time the product of their mill has in some years equaled the entire annual production of these high grade carpets in France and Great Britain.

The census record of the statistics of carpet manufacture begins with 1850, and its subsequent growth by ten-year periods is epitomized in the following table:

STATISTICS OF CARPET MILLS: 1850–1890.

YEARS.	Number of establishments	Capital.	Miscellaneous expenses.	Average number of employés.	Total wages.	Cost of materials used.	Value of products.
1850	116	$3,852,981	.....	6,186	$1,246,560	$3,075,592	$5,401,234
1860	213	4,721,768	.....	6,681	1,545,692	4,417,986	7,857,636
1870	215	12,540,750	.....	12,098	4,681,718	13,577,993	21,761,573
1880	195	21,468,587	.....	20,371	6,835,218	18,984,877	31,792,802
1890	173	*a*38,208,842	$1,819,441	29,121	11,633,116	28,644,905	47,770,193

a This amount does not include the value of "Hired property".

Although there has been a decrease in the number of carpet manufacturers reporting from 195 in 1880 to 173 in 1890, there has been a very marked increase in the capital, in the number of employés, in the amount of wages, and in the quantity and value of products. The number of sets of cards increased from 285 to 392. The number of combing machines decreased from 155 to 118, indicating the great increase in the purchase of yarns by weavers of carpets who find it to their advantage to have their worsted yarns spun for them. Of the combing machines credited to the worsted manufacture in this report a large number belong strictly to the carpet industry, since they are engaged exclusively in making yarns of the numbers 12 to 17, employed only by the carpet manufacturers. They were probably so credited in 1880. The number of spindles employed in the carpet manufacture proper was 208,858, of which 53,046 were woolen, 151,132 worsted, and 4,680 cotton spindles. In 1880 the number of woolen spindles was 32,853, and 82,256 worsted spindles.

These statistics of the spinning machinery of the carpet manufacture are no clew whatever to its status. To a degree unknown in any other branch of wool manufacturing the carpet weavers purchase yarns from spinners whose machinery and product are necessarily classified in this report either with the woolen or the worsted mills. In the city of Philadelphia, where there were 133 carpet mills reporting out of the 173 in the whole country, there were only 12 establishments which spun their own yarns. The decrease in the number of combing machines between 1880 and 1890 shows that this specialization of the industry is rapidly increasing. The loom is therefore the only true guide to the mechanical growth of this industry.

The total number of looms employed in carpet mills has increased from 7,252 in 1880 to 11,235 in 1890. This increase shows the rapid transfer of this industry from the hand to the power loom, the hand looms employed decreasing from 3,995 in 1880 to 2,697 in 1890, and the power looms increasing from 3,257 in 1880 to 8,538 in 1890.

The change from hand looms to power looms did not begin to become general in Philadelphia, the great seat of the industry in the United States, until about 1873. The hand looms had been invariably worked by men; the power looms are almost as generally operated by women, and consequently the increase in production, equaling about 100 per cent, was accompanied not only by a decrease in actual labor cost, but also by a decrease in the wages of weavers. The earnings of power loom weavers have never reached the standards paid to hand loom weavers, although they have been steadily tending upward since 1873.

The substitution of the power loom has proceeded much more rapidly in the United States than elsewhere. Indeed, the carpet manufacture may still be called a hand manufacture, except in the United States. F. H. Wigfall, United States consul at Leeds, reports the number of looms in that district, which is the chief center of the English carpet manufacture, as 1,166 in 1889, of which all but 60 were hand looms. At Tunstall, where the ingrain carpets are chiefly manufactured, the proportion of power looms is no greater. The persistence in the use of the hand loom is explained by Mr. Shoenhof, in a consular report, as due to the fact that the cost of production is nearly the same in both cases, "and hand loom weaving offers to the manufacturer the advantage that he need not sink the greater part of his capital into fixed charges of costly machinery". The hand looms generally belong to the weaver, who is supplied with yarns by the manufacturer, who may thus be a person owning no machinery or buildings of any kind. A hand loom in England costs £13 or $63, while a power loom costs £120 or $580, and a good hand loom weaver will turn out about 60 yards of ingrain carpet per week. Several of the English manufacturers who have introduced the power loom have been successful, and a change similar to that which has occurred in the United States must eventually take place in Great Britain, the experience of this country demonstrating beyond question that it is the most advantageous method of manufacturing.

In the present census there has been secured a closer subdivision of the number of looms employed upon each variety of carpets than has heretofore been made. The number of ingrain power looms has increased from 1,873 to 4,214; the number of brussels power looms from 756 to 1,224, and the number of tapestry brussels looms from 547 to 1,498.

There has been an increased production from this increased weaving machinery very nearly commensurate with the enlarged capacity thus indicated, as is shown by the following table, in which the relative quantities of the different varieties of carpets manufactured in 1890 and 1880 are set forth in detail:

CARPETS.

YEARS.	Total carpets (running yards).	Ingrain, 2-ply (square yards).	Ingrain, 3-ply (square yards).	Ingrain art (square yards).	Venetian (running yards).	Body brussels (running yards).	Tapestry, brussels (running yards).	Tapestry, velvet (running yards).
1890	74,770,910	32,918,659	3,251,368	553,513	.....	6,245,465	23,205,844	2,482,128
1880	39,282,634	21,986,434	862,394	.....	1,984,201	4,077,190	9,441,195	60,000

YEARS.	Wilton (running yards).	Axminster (running yards).	Moquette (running yards).	Smyrna (square yards).	Cottage (square yards).	Dutch (square yards).	Rag (square yards).	All other (square yards).
1890	1,030,101	379,341	3,193,186	127,177	.....	.....	71,310	1,312,818
1880	157,629	303,366	.....	.....	241,220	12,000	157,005	.....

The ordinary ingrain carpet width is one yard, but other carpets are usually made three-quarters of a yard in width. These figures show an increase of about 90 per cent in the production of carpets.

The increase in the manufacture of rugs and art squares is even greater than in carpets. In 1880 the census reported the manufacture of 40,000 separate druggets. In 1890 the druggets are reported in square yards, of which there were 103,258 square yards manufactured. In rugs of all descriptions there were made in 1880 47,530, and in 1890 1,563,303. Many of our largest manufacturers turned their machinery largely to the making of rugs, in response to the popular taste for partially covered floors. The greater part of this manufacture was of the cheaper grades, but the product also contained many rugs of a very high quality of material and workmanship, commendable for the skill and taste displayed in coloring and pattern. While these American rugs do not take the place of the eastern hand made rugs, which remain unrivaled by the products of machine manufacture, they easily stand the test of comparison with any similar work done in Europe.

Just before the census year the setting and weaving the patterns of Smyrna rugs by power looms was successfully achieved in Philadelphia. The patent for this loom became the subject of litigation, and the finding of the court was singular in this, that it states the conception of setting Smyrna rugs by power occurred about the same time to three different persons, namely, Joseph H. Bromley, of John Bromley & Sons; Thomas Bromley, jr., of the Bromley Brothers Carpet Company, and George W. Stewart, of John Stewart & Son. Looms constructed after plans made by each of these gentlemen were in actual operation during the census year. These looms are provided with a double shuttle-box on each side, and a mechanism which stops the loom after every two picks, and another by which it

may be started again by the foot. The Smyrna rug or carpet is a double-faced fabric, one side being the fac simile of the other. They are woven with one warp and two wefts, one of the latter consisting of coarse jute, the other of party-colored twisted chenille, a thread of each being shot or thrown alternately. After each weft of chenille is shot, it is necesssary for the weaver to set or adjust it with reference to the preceding weft of chenille, so as to form the figure, and to accomplish this the loom must be thrown out of action, after every second shot or pick. The mechanism above described successfully accomplishes the stopping and starting of the loom for these purposes. Before 1889 none of these carpets or rugs were made except upon hand looms; and of the 127,177 square yards of carpets reported as manufactured in the census year, almost the whole were of hand manufacture. The first Smyrna carpets manufactured in the United States date from about 1877, and the quantity made in 1880 was so small that they were not separately reported.

The American carpet manufacturers have won the command of their home market in all grades and styles of carpets, except the hand-made rugs referred to. The importations have fallen steadily, until in 1890 they comprised less than 600,000 square yards, valued at $1,564,890, nearly the whole of which quantity consisted of eastern hand made rugs. They have been aided in this achievement by the skill and good taste they have shown in the preparation of patterns and colors and by loyalty to the requirements of high art. Some deficiencies in dyeing, which interfered with the popularity of their high grade products in the earlier years, have been entirely overcome. The American industry as it stands to-day has a capacity to supply every variety of carpet required to meet every possible want, from the rich and luxuriant wilton and axminster, of limited demand and high price, through all the medium grades to the sightly and useful carpet, composed of the cheapest materials and adapted to the most modest homes.

Of the total product of carpets reported in 1890 the state of Pennsylvania produced 41,198,175 square yards, or 55.10 per cent.

CLASS IV—FELT GOODS.

The felt manufacture has been one of the distinctive features of the industry in the United States, although the volume of its products is small compared with those we have been considering. It was first separately enumerated in 1880, and the growth of this branch in the interval is shown in the following table:

STATISTICS OF FELT MILLS.

GENERAL HEADS.	1880	1890
Number of establishments	26	34
Capital	$1,058,254	a$4,460,621
Miscellaneous expenses	.....	232,871
Average number of employés	1,524	2,266
Total wages	$439,760	$1,041,296
Cost of materials used	$2,530,710	$2,809,937
Value of products	$3,619,652	$4,654,768

a This amount does not include value of "Hired property".

The products of felt manufacture constitute an almost innumerable variety of articles. The largest single item is felted cloths, of which 2,628,546 square yards are reported, valued at $986,888. These cloths are used for a great variety of miscellaneous purposes other than clothing, into which they do not largely enter, except as skirts and skirting. They were among the earliest forms of wool manufacturing attempted in the United States, Mr. Thomas R. Williams, of Newport, Rhode Island, having succeeded in inventing about 1820, the process of making felt cloth of commercial length, which he patented in England in 1830, and which was subsequently successfully operated in the Bay State mills at Lawrence, under exclusive rights, for many years. The exceptions to this monopoly were a fabrication of felt cloths, conducted in Norwich, Connecticut, under the Bishop patent, and the manufacture of hat bodies, conducted under the Wells patent. It is an interesting historical incident that this simple method of working wool, which was undoubtedly the earliest form of the manufacture in antiquity, should have passed almost wholly into desuetude until it was revived and perfected by one of our own countrymen. M. Koeppelin, a French expert, writing in 1869, made the following allusion to the subject:

> In spite of the simplicity of its fabrication, and in spite of the antiquity of its origin, felting was for a long time abandoned to the lesser industries. It is only within thirty years that the mechanical fabrication of felted cloths has been essayed. Many fruitless attempts were made in this direction in France and in other countries, and it is only to the inventive genius of two Americans, Wells and Williams, that we owe the processes now in use, and which have not been materially modified since the epoch of their discovery.

These processes were at once applied in France and England, and they are now extensively employed in the latter country in the manufacture of printed felt-carpetings, which are exported to all parts of the world and are popular because of their comparative cheapness. The production of these felt carpetings is relatively small in this country, 185,338 square yards being reported under the head of druggets, with a value of $91,742, their place being supplied by the cheaper grades of ingrain carpeting. Other forms of goods produced in the felt mills are

table and piano covers, hat felts, saddle felts, and rubber shoe linings. The miscellaneous products of the industry which are not separately enumerated include felt slippers and shoe soles, sheathing materials, polishing felts, for polishing furniture and marble, etc. There is an almost infinite variety of forms into which felted wool is manufactured, and nearly all of them are successfully conducted in this country, though generally on a small scale.

One highly important form of felt manufacture which has been successfully introduced since the last census by Alfred Dolge, at Dolgeville, New York, is the making of piano felt, for piano keys, an industry which was previously confined to two factories in England, two in France, and four in Germany.

Another considerable product of the felt mills are the endless belts used as blankets for paper making machines. This material is a woven fabric, very highly felted to produce strength and endurance, and it requires great care and nicety in its manufacture. 216,982 square yards of this blanketing was produced in the census year. The census of 1880 made no return whatever of these blankets; and, as a matter of fact, there were but few of them made in this country at that time, the paper manufacturers finding that the American blankets were inferior to those made in Germany, where practically all of these blankets were made up to a recent period. Since the manufacture was begun in good earnest in this country constant improvements have been effected in this class of goods, which have indirectly resulted in marked reductions in the cost of paper. The domestic production of these blankets is already largely in excess of the imported quantity. A single decade has therefore sufficed to enable our manufacturers to conquer this branch of the industry.

CLASS V—WOOL HATS.

The manufacture of wool hats has always been an important branch of our domestic wool manufacture. In his tables, prepared on the basis of the returns of the census of 1810, Tench Coxe reported the value of "hats made of wool, fur, etc., with mixtures of them", to be $4,323,744. Of this production about $100,000 was exported, and as the importation of hats of all kinds were then valued at but $350,000, it will be seen that the industry then occupied a unique position and possessed a relative importance among the occupations of the people which it long since lost. The industry was at that time essentially a household one, and was one of the last branches of the wool manufacture to adapt itself to factory conditions.

Up to about 1822 each locality had, in addition to its sawmill, gristmill, store, and blacksmith shop and shoemaker's shop, the hat shop, in which the boss hatter, with one or two apprentices, manufactured hats for the surrounding district. This primitive establishment latterly obtained its supply of stock from the city merchants, who furnished the carded wool, the web being wound on a drum, thus forming a bat or lap, as it was sometimes called, or by allowing the web to fall directly on the floor. The wool was manipulated by the hatter by means of the bow and bowstring, which was skillfully applied to the carded wool until it was flattened out into a hat of irregular form; then, by ingenious handling and putting a number of the bats together, the hat body in conical shape was finally formed. In 1822 a machine was invented for forming wool hat bodies. This machine operated by winding the web from the doffer directly upon the cone and forming one body at a time, the web being wound straight around the cone without crossing. Three years later the double cone former, which crosses the web by a vibrating motion and runs it from one end of the cone to the other, at the same time revolving on conical cylinders and covering the entire cone, was invented and patented. This machine, with many improvements, is still in use. Various other machines, also designed to form hat bodies automatically, were invented in subsequent years by American mechanics, and the factory manufacture of wool hats soon deprived the local hat maker of his occupation. A marked reduction in cost was effected and the consumption greatly increased in consequence. Between 1830 and 1840 a number of hat manufactories came into existence and steadily increased their facilities for production. The hand manufacture of hats had been obliged to use lamb's wool only, as the bowstring would not work except upon the straight fiber of the lamb's fleece. With the machine manufacture wool of any kind sufficed, provided it possessed the requisite felting qualities. From 1830 to 1845 the fine German Saxony lamb's wool and also the fine Spanish wools were largely used for hat bodies as possessing the best felting qualities. The wool hat manufacture had been subject to the vicissitudes of fashion more disastrously, perhaps, than any other branch of the industry. The silk hat, when it first made its advent about 1845, nearly prostrated the wool hat industry, especially those establishments which had been engaged in making the finer qualities, napped with fur. At a later date the development of the fur hat industry affected the wool hat manufacture even more seriously, and the effect of the competition is strikingly shown in the present statistics.

The statistics of the industry have been very irregularly reported in the census, owing to the fact that the increasing use of other materials than wool has made it less and less distinctively a branch of the wool manufacture. Prior to 1860 no separation was attempted. From the census of that year it appears that the industry consumed 3,039,700 pounds of wool and 1,658,520 pounds of fur, and produced 6,191,482 wool hats and 2,462,974 soft or felt wool hats, as compared with 2,449,672 fur hats. At no subsequent census has the number of wool hats equaled the number of fur hats manufactured, and the latter now greatly predominate.

The census of 1870 made no separate return of wool hats, but included them among the 483 establishments making hats and caps of all descriptions, to the value of $24,848,167. The trade data for that year indicate that there were then about 300 sets of 24-inch cards employed in the United States in the manufacture of wool hats, with a daily capacity of 15 dozen hats to the set. The census of 1880 showed 362 sets of cards employed in the industry, manufacturing 1,391,862 dozen wool hats, value not separately given. The census of 1890 shows the number of sets of cards reduced to 229, and the product of wool hats reduced to 972,475 dozens, valued at $4,612,151, or an average value of $4.74 per dozen. These figures illustrate the manner in which the wool hat manufacture has suffered from the competition of the fur hats, made originally from the fur of the beaver, and since that disappeared, from the fur of rabbits, hares, kangaroos, and similar animals.

The wool hat manufacture is thus rapidly being superseded by that of fur hats, as may be inferred from the following comparative table:

STATISTICS OF WOOL HAT MILLS: 1880 AND 1890.

YEARS.	Number of establishments.	Capital.	Miscellaneous expenses.	Average number of employés.	Total wages.	Cost of materials used.	Value of products.
1880	43	$3,615,830	.....	5,470	$1,893,215	$4,785,774	$8,516,569
1890	32	*a*4,142,224	$249,568	3,592	1,363,944	2,802,041	5,329,921

a This amount does not include value of "Hired property".

These figures do not mean that the manufacture of hats has fallen into decadence in the ten years, but simply that the fur hat is superseding the all wool hat in popular favor. In consequence many of the mills formerly engaged exclusively in the wool hat manufacture now produce chiefly of the other variety, and the statistics of their mills have therefore been transferred to the other industry. In the materials consumed in the manufacture of fur hats is included a large quantity of wool, the record of which is lost to this inquiry.

CLASS VI.—HOSIERY AND KNIT GOODS.

Not unlike the worsted manufacture in the rapidity of its development, and almost equaling it in the value and volume of its products, is the manufacture of hosiery and knit goods. The knit goods industry did not exist in this country as a branch of manufacture, properly so called, until 1832, when the principle of knitting by power was first successfully attained at Cohoes, New York, by Egbert Egberts. His machine was simply the square stocking frame of William Lee adapted to power. It produced a stocking web 28 inches wide at the rate of one inch per minute, which was cut off at proper lengths and shaped and seamed to form the stocking. The cost of manufacture was thus reduced to nearly one-tenth of what it had formerly been, and the enormous possibilities of the new industry were at once foreshadowed. It inaugurated a revolution in the character of underwear. Practically all this wear had been, up to that time, flannel goods, specially manufactured for that purpose, and fashioned and sewn at home, according to the individual needs. How nearly universal has become the use of knitted undergarments, how much more extensive has become the use of underwear, how vastly the comfort, the convenience, and the health of the masses have been promoted by this revolution, are too familiar to enlarge upon.

It took many years to impart momentum to this impending revolution. Ten years after Bailey's power machine had been in operation the whole value of stockings, woven shirts, and woven drawers produced in the United States was not over $500,000. The machine itself was still far from a perfect automatic machine, and it had not yet been introduced at all in England. Cognizance of the existence of this industry was not taken by the census until 1850. The rapidity of its development from that date is shown by the following table of the comparative statistics of the industry:

STATISTICS OF HOSIERY AND KNITTING MILLS: 1850–1890.

YEARS.	Number of establishments.	Capital.	Miscellaneous expenses.	Average number of employés.	Total wages.	Cost of materials used.	Value of products
1850	85	$544,735	.....	2,325	$360,336	$415,118	$1,028,102
1860	197	4,035,510	.....	9,103	1,661,972	3,202,317	7,280,606
1870	248	16,931,260	.....	14,788	4,429,085	9,835,823	18,411,564
1880	359	15,579,591	.....	28,885	6,701,475	15,210,951	20,167,227
1890	796	*a*50,607,738	$3,627,245	61,209	18,263,272	35,861,585	67,241,013

a This amount does not include value of "Hired property".

The number of knitting machines employed in the manufacture, all descriptions being grouped without reference to kind or capacity, increased from 13,038 in 1880 to 36,462 in 1890. There is no earlier record of the number of knitting machines.

The original establishments for the manufacture of knitted fabrics were small, and most of them continued to utilize knitting frames operated by hand. A factory at Portsmouth, New Hampshire, had been started in 1834, which did not introduce power until 1844; and in 1850 that state, now one of the largest producers of this class of goods, turned out a product of 3,000 dozen pairs of hosiery per year, a production considered so enormous that the managers of the single mill in existence doubted if a demand for this supply could be sustained. (*a*)

A new impulse was given to the industry by the adoption of the circular knitting machine invented by Pepper in 1851, and the subsequent introduction of the somewhat similar machine invented by the Messrs. Aiken, father and son.

Improvements on these early machines followed rapidly during the next twenty years, the most important among them being of American origin. The number and variety of patented improvements in machinery specially adapted to this class of industry has exceeded those in any other branch of the textile manufacture. Notable among them was the machine of E. E. Kilbourne, first patented in 1858; the first automatic machine for the making of full fashioned goods, which effected a second revolution in the industry.

But the basis of the present development of the industry was the outbreak of the civil war, during which the government became an enormous purchaser of the heavier and staple classes of hosiery goods, such as woolen shirts, drawers, blouses, and stockings. The great demand from this source, re-enforced by the complete protection which the tariff afforded, and the high prices of gold and exchange, led to the introduction of the manufacture of the finer styles of knitted goods, which had not been previously attempted in this country. Looms and machinery adapted for these goods were brought from abroad, skilled workmen were secured, and the knit-goods industry rapidly expanded to national importance.

Merchantable hosiery and knit goods are of three varieties, as respects the stock used: goods made wholly of wool, those made wholly of cotton, and those made of wool and cotton mixed. The last are known commercially as "merino" goods. The word "merino", meaning originally the fine wool of a Spanish breed of sheep, has come to have this secondary and commercial meaning, for no reason that can be explained, but it is fixed and universally understood. The proportions of goods thus made, as respects material, are determined by the demands of the consumer. The tendency to the larger use of cotton is perceptible. The all-wool underwear, while commended in many quarters on hygienic grounds, contends with the obstacle of high prices, the objection that it shrinks excessively, and that it carries more warmth than is required or desirable during the greater portion of the year. These objections are met by the mixture of cotton with the wool in the spinning of the yarn. From the proportion of half and half, the percentage of cotton employed increases until we reach the all-cotton fabric, of which immense quantities are made, especially of the lighter grades for summer wear. On the basis of this division the product of the country in the census year was divided as follows:

KINDS.	TOTAL.		HALF HOSE.		HOSE.		SHIRTS AND DRAWERS.	
	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.
Total		$67,241,013	7,078,505	$7,434,131	10,062,886	$11,728,075	6,861,657	$32,961,997
Woolen	4,692,209	16,497,395	1,360,824	2,892,822	2,242,544	4,722,796	1,088,841	8,881,777
Merino or mixed	3,335,362	16,451,999	376,053	604,773	433,083	791,227	2,526,226	15,055,999
Cotton	15,975,477	19,174,809	5,341,628	3,936,536	7,387,259	6,214,052	3,246,590	9,024,221
All other goods		15,116,810						

In the production of these goods raw wool, woolen yarn, and worsted yarn, aggregating 32,171,798 pounds and valued at $16,325,020 were used, as against 13,098,714 pounds of the same, valued at $7,433,708, used in 1880. Of cotton and cotton yarns used in their production the quantity was 64,681,466 pounds, valued at $11,301,188, as compared with 28,485,238 pounds of cotton and cotton yarns, valued at $4,547,557, used in 1880.

In addition to the above values cognizance should also be taken of the hosiery and knit goods products composed exclusively of silk, and separately reported under the silk manufacture, to the value of $1,156,172. This is a new development of the industry, which has almost wholly arisen during the past ten years.

The smaller products of the knit goods industry are too numerous for separate classification and enumeration. In addition to hosiery and underwear they comprise a great variety of fancy goods, such as ladies' hoods, shawls, sontags, nubias, scarfs, comforters, basques, afghans, leggings, mits, gloves, and the like, besides jersey cloth, which is simply a fabric knitted instead of woven, of which there were 3,065,057 square yards produced in the census year, valued at $2,157,692.

In the manufacture of these fancy knitted goods, as well as of many qualities of stockings, the line of demarcation between factory and household manufacture often disappears. A number of large houses in the eastern states, who are described as manufacturers, possess no factory and employ no power. They buy yarns in

a Bulletin National Association of Wool Manufacturers, XI, 62.

large quantities, which are given out to women in the surrounding towns to be knitted at home into such special goods as the market requires. This method of manufacturing, as applied to these particular goods, has greatly increased during recent years; and the difficulties attending a complete enumeration of the quantity and the value of products thus manufactured are insurmountable. There are millions of dollars worth of goods so made and sold which have escaped the vigilant search of the census agents. Another large product of knitted goods is enumerated with the glove industry, entering into goods whose chief material is some form of leather. Taken in all its ramifications therefore, and including products which are of semihousehold manufacture, this industry is much larger, in the value of its products, than the statistics indicate.

It is a characteristic of the manufacture of knit goods by machinery that while a vast saving over knit goods by hand is effected, there still remains, for many of its products, a large portion of the work which must be done by hand connected with the finishing of the goods.

SUMMARY AND CONCLUSION.

This investigation has shown that the domestic wool manufacture had reached a point of development, in 1890, where it was fairly on a par in many particulars with the same industry in European countries. Its relative importance may be partially measured by the fact that its consumption of wool now exceeds that of all other nations, with the exception of Great Britain, and that the home production of goods now meets the requirements of the home market, with the exception of about 11 per cent of the total value of the annual consumption of woolen goods, which is supplied by importations derived about equally from Great Britain and from the manufacturing countries of continental Europe. It is believed that this percentage of importations does not materially differ from that which prevails in these foreign countries, but on the other hand it is to be remembered that the United States is the only large wool manufacturing nation which does not manufacture at all for export.

It would not be proper to conclude this report without allusion to certain points of inferiority, both in general method and in the production of limited lines of goods, which are recognized by practical manufacturers who have carefully studied conditions, here and abroad. In England, for instance, organization is better and attention to details is more thorough in consequence. In what may be called the economies of manufacture, the English surpass our own manufacturers as a rule and are probably not surpassed in the world. They have been trained in these economies by their long experience in catering to foreign markets, where they encounter a constantly closer competition. They possess certain definite advantages growing out of the less mobile character of the operative classes. It is common for English workmen in the textile industries to pass their entire lives in the same mill at the same class of work. In the United States the factory population is constantly shifting, not only from mill to mill, but from town to town and into different occupations; and there is increasing difficulty in obtaining and retaining properly trained help. These conditions naturally affect not only the economies of manufacture, but also to a certain extent the quality and character of the products. There are lines of high-grade goods in which the American product does not regularly approach the fineness and perfection of finish peculiar to the goods of foreign mills, which have been exclusively employed on those particular lines for generations. This is especially noticeable in connection with certain products which are the peculiar glory of the French manufacture.

Other conditions have had their bearing in the struggle to overcome this inferiority. Some of these may be described in detail.

I. In England the system of sorting and classifying wools is carried to such perfection that the wool market is amply supplied with all the different sorts, so that the manufacturer may profitably run his mill on the finest or the lowest sort. From the want of concentration of wool in our markets, and other causes, the American manufacturer sorts his own wool, and having it of different grades must make goods of corresponding grades. He must make low as well as high class fabrics; and it has followed that there has been less tendency on the part of the domestic manufacture to confine itself to single specialties, and to base reputation and success upon those specialties.

II. American manufacturers have been handicapped by the comparative lack of expert training in the important departments of designing and dyeing. While the importance of a close and skillful attention to the selection, preparation, and spinning of wool is not easily overestimated, yet it has become more important every year that the highest skill shall be employed in determining the organization of fabrics, both as to pattern and coloring. The wool manufacture has entirely changed in the last sixty years in this respect. Formerly it was employed upon plain textures, of plain colors. The introduction of fancy goods has made it impossible to determine from one season to another what freak or fluctuation in the popular taste will next dominate the market. In this state of facts the designing department becomes the real key to the success of the mill. To study the tendencies of the times, to anticipate them if possible, to capture public favor by novelty of design or pattern, is an art which only long training can impart to great natural aptitude. In the same way the mysteries of the dye house are a study worthy of the highest mind, and the introduction of the aniline dyes has made possible new combinations and shades of coloring, which are constantly appearing.

III. The facilities for technical education in these important departments of manufacture are far superior, in all the manufacturing countries of Europe, to anything existing in the United States. Textile schools exist in Germany, Belgium, Austria, and France, equipped with the most skillful instructors and every appliance, supported wholly or in part by the government, which turn out annually large bodies of carefully trained young men, who take their places in the factories, where they supplement by practical experience the instruction they have received in every department of the manufacture. Of late years similar educational institutions have been established at the chief textile centers of England, also the recipients of public support, and they have rapidly advanced to an efficiency almost equal to that of the continental schools. The influence of these institutions upon the development of the textile industries of the countries in which they are located has been greater than we realize in this country, where we have depended, for the education of experts, upon the schooling of the mills themselves. One school, the Lowell School of Design, connected with the Massachusetts Institute of Technology, has for many years supplied in a limited degree a training somewhat similar to that obtained in these foreign schools. In 1883 a second school, planned to cover instruction in all branches of the textile industry, was

established in Philadelphia, in connection with the Pennsylvania Museum of Fine Arts, through the liberality and public spirit of a few of the leading manufacturers of that city. It has already achieved a notable success, and its graduates are found in the leading mills throughout the country. But its resources are limited, and its capacity still more so, in view of the enormous development of our textile industries during the last quarter of a century. The more successful of our designers and experts in dyeing still come to us from across the water. The United States is far behind Europe in its facilities for the training of men and women in the great work of the application of art to the textile manufacture.

IV. In the mechanical departments, the best American mills do not at present suffer in comparison with those of any other country. We have seen that in the earlier years of the century our manufacturers were terribly handicapped by the inferiority of their machinery. This inferiority they gradually overcame, largely by original inventions, and in other particulars by the importation of foreign-built machinery. The catalogue of American contributions to the mechanical development of wool manufacture is so imposing that the late Dr. Hermann Grothe, the German expert, was led to write that it is not surpassed by that of any other nation, not excepting even England. (*a*) He says there are repeated cases where American finishing machinery has been exported to England and France to become the basis of other improvements, claimed to be original, and essentially contributing to the establishment in those countries of the textile industries. This is prominently the case, he adds, with the machinery for fulling, gigging, and shearing cloth; the fulling mill with rollers is completely an American invention (that of John Dyer, patented in 1833); the invention of the double-crank shaft fulling mill was made by Levi Osborne in 1804, commencing a great series of constructions of the same principle; all the English gigging mills were patented after the gigging mills in America of Christie Olney, Barrows, Beck, Wells, and others, had appeared; the merit of the invention of the cylinder shearing machine belongs to Samuel Griswold Dorr, and of the pressing machine with steam to Seth Hart, who received a patent in 1812. The invention of machinery for the manufacture of felted cloths is exclusively American in its origin. The principle of all the machines for burring wool used here and abroad, viz, striking the burr from a card or toothed cylinder by means of a rapidly revolving guard or blade, was first applied to a machine about 1833 by Michael H. Simpson, of Boston, whose improvements upon the Couillard combing machine were also of a nature so radical as to entitle them to rank as original inventions. Allusion has already been made to the Goulding invention, which dispensed with the billy, and which has been described by Dr. Hayes as "the most important of all contributions to the card-wool industry of the world during the present century". Power was first applied to the knitting machine in the United States in 1832 by Egbert Egberts, at Cohoes, New York, and in the variety, the ingenuity and the importance of the knitting machines for making fashioned knit goods the American contributions are more important than those of all other countries combined. The power carpet loom, in all its varieties, is wholly an American conception. Of looms generally it is recognized that the American inventions and subsidiary appliances are superior in every respect to those of any other country, and they are now made and largely used abroad under concessions from the patentees.

In the subsidiary improvements of machinery for the manufacture of wool, in the scouring machines, the feeding appliances, the automatic stop actions, the thousand smaller mechanisms which increase efficiency and production, which economize labor, and impart regularity and perfection of manufacture, the American contributions have been innumerable, and they have advanced the manufacture, in matters of detail, quite as far, although by less radical steps, as the machines which involved the application of some new principle in mechanism. Many of our mills are in no sense behind the best English mills in the application of these minor mechanisms. While the American visitor in English mills will be struck with some radical points of difference in equipment, he will conclude that in point of general mechanical efficiency the industry occupies practically the same footing in both countries.

The most striking point of difference in mechanical organization lies in the fact that English mills, like those of France and Germany, are as a rule equipped for special classes of work, to the exclusion of all others, while the American mills as generally are equipped for a great variety of processes and of products. The advantages gained by this specialization are too obvious to be dwelt upon at length. A worsted spinning mill, equipped to make a particular number of yarn, will produce that yarn with a greater economy than an American mill, equally perfect in machinery, which is compelled to constantly adjust that machinery to the production of yarns of different numbers. Elsewhere in this report allusion is made to the entirely different system of manufacturing which prevails in England, and to the advantages which spring from it.

V. The United States is the only one of the large wool manufacturing nations which does not have free access to the wool markets of the world. It has developed its wool manufacture along lines very largely determined by this unique position among its competitors, and comparison with other countries is made more difficult on this account. To offset the fact stated, it is true that the United States is the only large wool manufacturing nation which supplies within itself the larger proportion of the raw material consumed in its mills. Of the wool consumed by Great Britain in 1890, 120,000,000 pounds was home grown and 350,000,000 pounds foreign grown. France consumed in the same year 124,000,000 pounds of domestic wool and 295,000,000 pounds of imported wool. The

a Bulletin National Association of Wool Manufacturers, xi: 59.

United States reversed these proportions, consuming 258,681,000 pounds of domestic and 114,116,000 pounds of imported wool, three-quarters at least of the latter being third-class wool consumed in the carpet manufacture. The consequence of this dependence upon a domestic supply has been to very largely persuade the home manufacturer into the production of those classes of goods to which the wools of the United States are best adapted, and for which it is conceded that they have no superiors.

Since the policy of a tariff on wool for the purpose of fostering domestic production was first adopted by the United States the conditions surrounding the wool supply of the world have radically changed. At that time each manufacturing nation relied chiefly upon its home supply of the raw material—England, in particular, depending almost wholly upon her domestic clip, which had been recognized for centuries as one of the chief sources of the national wealth. In 1830 the exported wool clip of the Argentine Republic was barely 60,000,000 pounds; in 1890 it was 258,000,000 pounds, and in previous years it had surpassed 350,000,000 pounds. In 1842 the Australian export of wool was 14,000,000 pounds, that being the first year in which its statistics were recorded; in 1890 the Australian wool clip was 550,000,000 pounds. The Cape of Good Hope clip has increased from 26,000,000 pounds in 1860 to 128,681,000 pounds in 1890. These three countries, which were hardly a factor in the world's wool supply in 1830, are now the sources from which is drawn nearly two-thirds of the clothing and combing wools.

The economic influences of these changes in the sources of the fine wool supply can hardly be traced or estimated, although they are visible everywhere. The United States has been exempt from them, to a very large degree, so far as the manufacture is concerned, not more than 36,000,000 pounds of these wools having reached this country in any one year. But the effect of this constantly increasing new supply of raw material, a supply which at times has seemed to increase faster than the demand, has been very perceptible in the domestic wool markets, where the prices of domestic fleece have sympathized closely with the fluctuations in prices abroad. The average annual price of the average Port Philip fleece has fallen in the London market from 25 pence in 1873 to 16 pence in 1890, and of Buenos Ayres average greasy from 7 to 5 pence between the same years, while the decline in Ohio medium fleece was from 68 cents in 1873 to 37 cents in 1890. In view of the steady forcing down of the price of domestic wool, notwithstanding the tariff, by the pressure of increased production, on a large scale, in these countries of the southern hemisphere, where the conditions attending sheep raising are in some respects superior to those of our own country, it may be taken for granted that there will never be any considerable exportation of domestic wool.

On the other hand, it is not to be expected that there will ever be any considerable domestic supply of the coarse long wools chiefly relied upon by our great carpet industry. The sheep producing these wools are comparatively worthless for mutton, their fleece is light in weight, and because of its coarseness brings a comparatively low price in the market. The culture of such sheep is not likely to be pursued as a final object where any purpose is entertained of improved sheep husbandry, and in those sections of the United States where the native sheep of Mexican origin have predominated the breeding up has been rapid. We have produced admirable carpet wools in Colorado and the territories, equal in whiteness, strength, and length of staple to the best imported from South America. But the supply of domestic carpet wools now reaching the markets is merely nominal, and it is a fact well recognized by intelligent growers that carpet wools can not be grown with profit in this country, and therefore that practically they can not be grown at all.

In the production of the finer wools the domestic supply, instead of increasing in consonance with the increased requirements of the American manufacturers, is growing less from year to year. In Pennsylvania, Ohio, Michigan, and other states which are peculiarly adapted to the growth of fine wools, and from which the domestic supply has come, the number of sheep has been steadily declining for many years. While improvements in machinery have permitted a larger and larger use of the increasing supplies of territorial wools for purposes akin to those of the fine wools, yet there exists a deficiency, which is made up by increasing importations of Australasian wools. It is frequently asserted that the United States possesses every variety of soil and climate and all the food conditions necessary to produce every grade of wool in quantities equal to the utmost domestic demand. Regarding this proposition, it is enough to say that if the conditions exist the supply does not, and that the deficiency must therefore be made up from foreign sources. The increase in our importations of Australian wools has been the most marked characteristic of the industry during the decade ending with 1890. The records of the Treasury Department do not contain the complete details of Australian wool imported in 1879 and 1880. The direct importations were 399,518 pounds in 1879 and 7,666,604 pounds in 1880, additional supplies coming in both years from the London auction sales. In 1890 the importations direct and via London reached a total of 11,950,158 pounds, and in several prior years were even more, reaching 16,577,974 pounds in 1886. While these importations are insignificant in amount when compared with the domestic wool clip, they are very large in comparison with the domestic clip of strictly fine wool of a like grade. In making their purchases of Australian wool the American manufacturers and dealers are confined to the wools of lightest shrinkage, upon which the duty operates the least severely, and as the supply of light-shrinkage wools is limited, the American competition influences to increase their price over that of other wools of like quality but heavy shrinkage, thus further limiting their purchases as compared with what they would be under an ad valorem form of duty.

VI. Another disadvantage under which the domestic wool manufacture labors, is the fact that it is, and always has been, subject to conditions by which styles and fashions are determined abroad. London sets the fashions in men's wear goods, and Paris in women's wear goods. The American manufacturer, except the maker of plain and staple fabrics, is compelled to follow the styles determined in these cities, if he expects to command the home trade. This is always a difficult and sometimes an impossible thing to do, under the existing system which compels the manufacture of goods fully a year in advance of the season for whose wear they are intended. The difficulty is greatly increased by the survival of the prejudice born in the primitive days of the manufacture, in favor of foreign as against home-made woolens. This prejudice is disappearing, but it is still a positive factor which must be recognized. Mr. H. N. Slater, of Webster, Massachusetts, in a letter written in 1888, stated the degree of this prejudice and the common method of meeting it, as follows:

> Our family has been engaged in the broadcloth manufacture in this town since 1818, during which time more or less fine Saxony wool has been required and imported for us. * * * These superfine cloths have never been sold directly to the merchant tailor as American, and could not now be if manufactured. The impression is general among the trade that they can not be made in this country, the average consumer wanting something "foreign". During many years (forty years ago) our goods were made, tilloted, and sold (but not as a rule directly) as foreign goods. No merchant tailor thinks of offering a fashionable gentleman a fine American cloth.

The habit of affixing foreign labels to home-made goods is still a common one, and is a device warranted by a prejudice which is no longer justifiable on any ground, and is in strange contrast with the intense Americanism of our people in other respects.

In the facts last stated may be found one of the chief reasons why the quantities and values of woolen goods imported into the United States have exceeded those in any other manufacturing industry, with the single exception of iron and steel, almost from the beginning of the century. In its ratio to the value of the domestic product, the value of woolen goods imported has largely exceeded that of the imports of iron and steel. What this ratio for woolen goods has been at each of the census periods from 1820 is shown in the following table, which also gives the value per capita at each of the census periods, both of the domestic products and the importations, and the percentage of each in the total consumption of the year:

COMPARATIVE STATEMENT OF DOMESTIC AND IMPORTED WOOL MANUFACTURES, WITH PER CAPITA VALUE AND PERCENTAGE OF TOTAL CONSUMPTION. (*a*)

DOMESTIC MANUFACTURES (CENSUS).		Value per capita.	Per cent of total consumption.	NET IMPORTATIONS (AVERAGE FOR 10 YEARS).	Value per capita.	Per cent of total consumption.
Years.	Value.			Value.		
1820	$4,413,068	$0.46	39.15	*b*$6,859,702	$0.71	60.85
1830	14,528,166	1.13	63.67	8,290,062	0.64	36.33
1840	20,696,999	1.21	59.74	13,950,772	0.82	40.26
1850	49,636,881	2.14	79.24	13,005,852	0.56	20.76
1860	80,734,606	2.57	72.04	31,333,273	1.00	27.96
1870	217,668,826	5.65	86.82	33,046,521	0.86	13.18
1880	267,252,913	5.33	87.11	39,537,694	0.79	12.89
1890	337,768,524	5.39	88.63	43,345,981	0.69	11.37

a Cotton hosiery and knit goods, included in the census figures of this table, are not included in the value of imports.
b Net imports for year ending September 30, 1821.

The value per capita of the domestic manufactures in 1870 is a currency value, at a time when the gold value of the dollar averaged 79.81 cents. Allowance being made for that fact, the per capita valuation of the product has shown a nearly uniform increase in each decade since 1860, and was in 1890 just 2.10 times the value per capita in 1860. In other words, the increase in the industry has been in more than double the ratio of the increase in the population. The decrease in the per capita value of the imports of woolen goods has not been in the same ratio, showing that the consuming capacity of the American people has kept steadily in advance of the increasing productive capacity of the wool manufacturers. The percentage of foreign goods in the total annual consumption of our people is now no larger than it is in Great Britain.

In considering the following tables, presenting the data for all branches or subdivisions of the wool industry, reference should be made to the text and tables on the combined textile industries which precede this report.

Tables 1 and 2. To enable a convenient comparison of the statistics relating to the wool manufacture at different census periods, Table 1 comprises all the items of the inquiry common to a number of such periods, and the statistics are given for each decennial year from 1840 to 1890, both inclusive; this is followed by a similar statement (Table 2) for the manufacture of hosiery and knit goods. Particular attention is invited to the fact that these comparative tables include the results of widely varying methods of inquiry, so that a careful consideration of the explanatory footnotes is essential in order to avoid erroneous deductions.

Table 3 contains the totals by states for the principal items of the inquiry for 1890, considering the industry as a whole and including the manufacture of hosiery and knit goods.

Table 4 exhibits a total for the United States, under each item of the schedule of inquiry for 1890 (excepting details relating to employés and their wages), for each branch of the industry, viz, woolen mills, worsted mills, carpet mills (other than rag), felt mills, wool hat mills, and hosiery and knitting mills. The general heads under which the itemized statistics will be found are as follows: Capital, miscellaneous expenses, power, machinery, materials, and products.

The six tables following Table 4 correspond thereto in form and scope, but contain statistics for each of the different branches of the industry which are segregated in these tables and shown by totals for each state and for the United States. Their titles are as follows:

Table 5. Woolen mills.
Table 6. Worsted mills
Table 7. Carpet mills.
Table 8. Felt mills,
Table 9. Wool hat mills.
Table 10. Hosiery and knitting mills.

Table 11 is a presentation of employés and wages for the wool industry considered in its entirety. It shows, by totals for each state and for the United States the average number of men, women, and children distributed into the following classes: (1) Officers or firm members actively engaged in the industry or in supervision; (2) clerks; (3) operatives and skilled labor; (4) unskilled labor; (5) pieceworkers.

The average number of weeks employed, the average weekly earnings per employé, and the total wages are shown for men, women, and children in each class, excepting pieceworkers. The statement for pieceworkers gives the total number of men, women, and children, respectively, and the total wages reported for each.

Table 12 presents the employés and wages for each of the six branches or subdivisions of the wool industry in the same form as Table 11, showing totals for each state and for the United States.

Table 13 shows for the wool manufacture in its entirety the various weekly rates of wages paid, and the average number of men, women, and children employed at each rate, by totals for each state and for the United States.

In Table 14 the data contained in Table 13 are segregated and shown for each branch of the industry, by totals for each state and for the United States.

Table 15 contains the data relating to custom carding mills, which have been included as woolen mills in the preceding tables; they are segregated in this table, and a distinct presentation is made by totals for states and for the United States.

Table 16 shows details, by totals for states and for the United States, relating to the number of establishments idle during the census year, their capital and machinery.

Table 17 contains a detailed presentation by totals for states and for the United States, showing the results of the inquiry relating to the shoddy manufacture.

TABLE 1.—COMPARATIVE STATEMENT OF WOOL MANUFACTURE FOR THE UNITED

(EXCLUDING HOSIERY

	STATES AND TERRITORIES.	Number of establishments. (b)	Capital. (c)	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.					MACHINERY.	
				Aggregates.		Males above 16 years.	Females above 15 years.	Children.	Cards.	Combing machines.
				Average number.	Total wages.					
	United States:									
1	1840	1,420	$15,765,124	21,342		21,342				
2	1850 (d)	1,675	31,971,631	45,438		26,559	18,879			
3	1860 (e)	1,476	38,814,422	50,419	$11,699,630	29,852	20,567		3,319	
4	1870	3,208	121,451,059	105,071	35,928,150	53,400	39,150	12,521	8,705	261
5	1880	2,330	143,512,278	132,672	40,687,612	67,942	49,107	15,623	6,989	515
6	1890	1,693	e245,886,743	157,923	58,397,470	82,080	65,066	10,777	7,015	869
	New England states:									
7	1840	489	9,259,935	11,268		11,268				
8	1850	482	17,667,892	22,520		11,980	10,540			
9	1860	420	24,700,353	30,130	7,032,555	16,993	13,137		1,774	
10	1870	675	63,856,145	54,851	19,588,984	26,462	22,605	5,784	3,471	225
11	1880	564	75,522,666	67,582	21,390,036	34,939	25,712	6,931	3,396	302
12	1890	518	134,627,725	79,063	30,027,697	43,599	31,178	4,286	3,762	519
	Maine:									
13	1840	24	316,105	532		532				
14	1850	36	467,600	624		310	314			
15	1860	28	940,400	1,064	273,596	565	499		80	
16	1870	108	4,187,745	3,104	1,065,151	1,592	1,287	225	335	
17	1880	96	4,016,328	3,244	1,090,528	1,810	1,140	294	274	
18	1890	78	9,456,830	5,193	1,961,511	3,285	1,758	150	387	5
	New Hampshire:									
19	1840	66	740,345	893		893				
20	1850	61	2,437,700	2,127		926	1,201			
21	1860	54	2,647,300	2,655	687,746	1,291	1,364		204	
22	1870	82	5,626,100	5,081	1,788,894	2,259	2,328	494	360	12
23	1880	61	7,150,855	5,599	1,701,619	2,811	2,284	504	317	21
24	1890	52	12,015,721	6,222	2,352,565	3,276	2,762	184	380	29
	Vermont:									
25	1840	95	1,406,950	1,450		1,450				
26	1850	72	886,300	1,393		683	710			
27	1860	46	1,746,300	2,073	214,572	895	1,178		99	
28	1870	66	2,330,900	1,895	649,628	935	759	201	177	
29	1880	44	2,320,161	2,084	544,138	1,171	783	130	145	
30	1890	29	3,304,382	1,585	625,440	947	601	37	120	
	Massachusetts:									
31	1840	144	4,179,850	5,076		5,076				
32	1850	119	9,089,342	11,130		6,167	4,963			
33	1860	147	13,005,853	15,638	3,658,589	8,964	6,674		873	
34	1870	226	26,722,900	28,025	9,809,718	13,228	11,961	2,836	1,433	172
35	1880	214	36,764,000	34,717	11,027,822	17,588	14,060	3,069	1,622	190
36	1890	219	66,568,586	38,363	14,658,774	21,231	15,420	1,712	1,785	265
	Rhode Island:									
37	1840	41	685,350	961		961				
38	1850	45	1,013,000	1,758		987	771			
39	1860	58	3,169,000	4,232	1,069,728	2,594	1,638		253	
40	1870	76	10,467,500	7,894	2,862,492	3,644	3,184	1,066	434	7
41	1880	91	13,016,116	12,125	3,703,257	5,871	4,387	1,867	495	70
42	1890	69	24,310,743	17,787	6,561,759	8,946	7,114	1,727	558	193
	Connecticut:									
43	1840	119	1,931,335	2,356		2,356				
44	1850	149	3,773,950	5,488		2,907	2,581			
45	1860	87	3,191,500	4,468	1,128,324	2,684	1,784		265	
46	1870	117	14,521,000	8,852	3,413,101	4,804	3,086	962	682	34
47	1880	88	12,255,206	9,813	3,322,672	5,688	3,058	1,067	543	21
48	1890	71	18,971,463	9,913	3,867,648	5,914	3,523	476	532	27
	Middle states:									
49	1840	620	5,519,175	8,464		8,464				
50	1850	717	8,351,908	13,802		8,549	5,253			
51	1860	659	10,472,728	16,121	3,717,095	9,928	6,193		920	
52	1870	1,024	37,194,990	36,322	12,619,089	18,182	13,028	5,112	2,558	36
53	1880	794	53,834,368	54,138	16,682,073	26,797	20,144	7,197	2,154	210
54	1890	652	86,140,259	63,757	23,929,322	30,938	27,472	5,347	2,203	301
	New York:									
55	1840	323	3,469,349	4,636		4,636				
56	1850	249	4,459,370	6,674		4,262	2,412			
57	1860	168	4,133,568	6,123	1,351,955	3,475	2,648		324	
58	1870	272	14,451,232	12,487	4,315,710	6,199	4,583	1,705	940	1
59	1880	189	18,248,698	16,428	5,189,180	7,405	6,931	2,092	830	80
60	1890	138	26,853,583	17,693	6,596,593	8,167	8,217	1,309	702	84
	New Jersey:									
61	1840	31	314,650	427		427				
62	1850	41	494,274	898		411	487			
63	1860	45	646,200	986	226,788	608	378		61	
64	1870	36	1,524,200	1,522	493,054	709	552	261	98	6
65	1880	37	2,991,125	4,072	1,152,754	2,287	1,118	667	161	9
66	1890	35	6,441,571	5,971	2,073,771	2,965	2,787	219	202	23

a The comparative statement of hosiery and knit goods manufacture is given on pages 80 to 85.

b The number of establishments affords no clew to the growth or condition of the industry of wool manufacturing. This is due to the fact that in all censuses of the industry (except that of 1860) the custom carding mill has been counted as a wool factory, although it is not, in the modern use of the term, a factory, and ought not therefore to be included with the statistics of factory manufacture. The present census has made such an elimination possible hereafter by a distinct statement (Table 15) of the statistics of custom carding mills.

STATES, BY GEOGRAPHICAL DIVISIONS AND STATES AND TERRITORIES: 1840–1890.

AND KNIT GOODS.) (a)

MACHINERY—cont'd.		Cost of materials used.	PRINCIPAL RAW MATERIALS—QUANTITIES CONSUMED.						Value of products.	
			Wool.			Hair, noils, etc. (Pounds.)	Cotton. (Pounds.)	Shoddy. (Pounds.)		
Looms.	Spindles.		Total. (Pounds.)	Foreign. (Pounds.)	Domestic. (Pounds.)					
									$20,696,999	1
		$28,831,583	70,862,829						48,608,779	2
16,075	639,700	43,447,048	95,452,159				17,248,061		73,454,000	3
45,737	2,046,113	124,318,792	214,373,219	46,288,805	168,084,414		26,420,626	19,384,404	199,257,262	4
57,297	2,111,973	149,160,600	287,597,334	72,751,940	214,845,394	8,011,037	63,830,664	50,640,663	238,085,686	5
69,658	2,793,147	167,233,987	351,158,020	111,382,308	239,775,712	26,262,316	94,372,267	56,826,475	270,527,511	6
									12,959,486	7
		16,055,233	43,118,059						26,077,812	8
8,920	393,333	29,570,028	67,702,407				11,883,078		47,722,814	9
21,865	1,206,717	68,819,733	123,791,815	30,295,579	93,496,236		11,479,564	10,917,494	108,295,425	10
30,692	1,246,100	80,152,160	163,763,773	43,475,554	120,288,219	2,441,485	26,775,273	28,653,694	130,014,752	11
33,348	1,570,097	86,887,689	195,867,736	58,429,807	137,437,929	9,366,220	39,833,876	35,721,895	139,302,134	12
									412,366	13
		495,940	1,438,434						753,300	14
185	11,765	1,035,876	2,454,300				82,509		1,759,007	15
1,161	66,649	4,013,759	7,721,228	382,727	7,338,501		769,363		6,483,881	16
1,103	68,192	4,443,190	9,074,911	1,085,606	7,988,405	402,707	1,576,462	1,302,789	6,959,003	17
2,020	126,418	5,675,347	13,782,749	1,744,381	12,038,368	1,346,818	2,639,862	1,515,035	8,737,653	18
									795,784	19
		1,267,329	3,604,103						2,127,745	20
696	36,320	2,775,926	5,505,106				861,000		4,358,713	21
1,695	125,079	6,569,028	11,832,666	1,968,869	9,863,797		1,670,994	1,380,000	10,513,226	22
2,884	138,223	6,605,355	15,172,837	2,379,575	12,793,262	50,362	2,871,944	3,115,890	10,858,971	23
4,049	136,648	7,024,461	18,696,016	4,854,212	13,841,804	150,056	4,308,465	3,424,970	10,963,250	24
									1,331,953	25
		830,684	2,328,100						1,579,161	26
463	23,371	1,662,650	4,047,010				279,500		2,938,626	27
670	49,255	1,955,972	4,611,347	1,120,680	3,490,667		77,800	225,967	3,644,459	28
746	46,264	2,012,490	3,603,191	161,404	3,441,787	7,598	640,470	2,286,150	3,217,807	29
682	41,839	1,435,163	3,940,070	1,279,250	2,660,820	8,650	659,601	1,562,221	2,723,683	30
									7,082,898	31
		8,671,671	22,229,952						12,770,565	32
4,237	159,651	15,367,378	39,731,072				5,871,370		24,015,443	33
11,662	567,611	33,795,994	63,499,752	20,189,746	43,310,006		5,056,357	5,994,110	52,270,608	34
15,863	588,941	40,283,171	84,929,798	28,011,595	56,918,203	1,751,208	13,704,566	13,017,085	64,968,209	35
16,349	739,952	42,273,379	97,757,379	34,930,030	62,827,349	6,770,990	15,160,584	21,608,371	67,599,321	36
									842,172	37
		1,463,900	4,103,379						2,381,825	38
1,586	86,048	4,071,464	6,835,100				3,056,200		6,917,705	39
3,383	215,973	9,826,158	14,421,967	772,247	13,649,720		1,697,139	919,000	15,394,067	40
6,957	228,262	13,079,812	27,141,974	4,469,088	22,672,886	166,893	4,783,289	2,027,782	21,588,204	41
6,608	340,326	19,976,086	39,973,992	8,929,242	31,044,750	317,184	4,095,989	2,168,503	32,205,829	42
									2,494,313	43
		3,325,709	9,414,100						6,465,216	44
1,753	76,178	4,657,634	9,129,819				1,732,508		7,733,320	45
3,294	182,150	12,658,822	21,704,855	5,861,310	15,843,545		2,207,911	2,398,417	19,989,184	46
3,139	176,218	13,728,142	23,841,962	7,368,286	16,473,676	62,717	3,198,542	6,903,998	22,423,458	47
3,640	184,914	10,503,253	21,717,530	6,692,692	15,024,838	772,522	3,969,375	5,442,795	17,072,398	48
									6,637,708	49
		8,040,747	22,437,754						14,065,456	50
6,432	210,054	10,938,446	18,910,319				4,943,183		20,386,330	51
18,291	554,247	41,941,018	61,166,252	15,834,201	45,332,051		13,321,576	8,457,123	68,467,540	52
22,206	638,484	57,908,066	95,389,023	28,976,386	66,412,637	5,463,552	33,857,475	20,951,183	91,136,451	53
29,902	914,990	68,103,765	118,634,796	50,706,698	67,928,098	16,823,593	54,972,659	18,913,964	110,911,526	54
									3,537,337	55
		3,838,292	12,538,786						7,930,604	56
1,686	87,887	4,311,116	8,535,498				193,683		7,498,677	57
3,860	166,260	11,676,379	25,518,652	9,305,779	16,212,873		1,186,659	452,990	19,609,021	58
3,870	198,420	14,478,735	29,987,847	13,495,159	16,492,688	1,394,947	4,434,013	2,166,471	25,078,747	59
5,025	344,847	16,759,138	35,305,909	21,345,999	13,959,970	2,074,631	7,781,739	1,617,481	28,563,569	60
									440,710	61
		548,367	1,510,289						1,164,446	62
270	10,361	596,895	1,443,800				239,500		1,197,694	63
776	26,769	1,618,753	2,856,525	480,347	2,376,178		407,398	27,000	2,616,461	64
1,285	35,791	3,858,992	6,990,378	655,001	6,335,377	1,107,749	1,559,502	2,676,856	5,967,893	65
1,533	77,069	5,450,490	12,524,210	1,348,047	11,176,163	490,110	2,625,882	2,927,640	8,893,237	66

c Value of hired property is not included in the capital reported in 1890, because it was not included in the reports of previous census years.

d The details of the carpet industry were not given by states in 1850. The totals, however, have been added to the "Total for the United States" in this table, the figures being as follows: establishments, 116; capital, $3,852,981; number of employés, 6,186; cost of materials used, $3,075,592, and value of products, $5,401,234.

e Carding mills were not included in the report of the woolen industry of 1860, and are therefore not included in the figures for that year in the above table. There were 712 of these establishments, with a total capital of $1,080,985, employing 1,276 hands, at a cost of $286,267. They received 5,230,651 pounds of wool and produced 5,091,196 pounds of wool rolls, valued at $2,403,513.

TABLE 1.—COMPARATIVE STATEMENT OF WOOL MANUFACTURE FOR THE UNITED STATES,

(EXCLUDING HOSIERY

	STATES AND TERRITORIES.	Number of establishments.	Capital.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.					MACHINERY.	
				Aggregates.		Males above 16 years.	Females above 15 years.	Children.	Cards.	Combing machines.
				Average number.	Total wages.					
	Pennsylvania:									
1	1840	235	$1,510,546	2,930		2,930				
2	1850	380	3,005,064	5,726		3,490	2,236			
3	1860	407	5,211,510	8,484	$2,016,384	5,488	2,996		483	
4	1870	672	20,615,413	21,573	7,607,489	10,831	7,714	3,028	1,429	29
5	1880	548	31,898,226	32,989	10,162,244	16,688	11,936	4,365	1,120	121
6	1890	467	52,021,256	39,413	15,031,632	19,463	16,238	3,712	1,254	188
	Delaware:									
7	1840	2	107,000	83		83				
8	1850	8	148,500	140		122	18			
9	1860	4	117,000	114	27,564	76	38		8	
10	1870	11	384,500	399	115,137	186	110	103	30	
11	1880	5	352,559	261	108,504	171	59	31	13	
12	1890	3	450,974	297	103,395	146	112	39	15	
	Maryland: (a)									
13	1840	29	117,630	388		388				
14	1850	38	244,000	362		262	100			
15	1860	35	364,450	414	94,404	281	133		44	
16	1870	32	215,245	339	87,099	255	69	15	61	
17	1880	15	343,760	388	69,391	246	100	42	30	
18	1890	9	372,875	383	123,931	197	118	68	30	
	District of Columbia: (a)									
19	1840									
20	1850	1	700	2		2				
21	1860									
22	1870	1	4,400	2	600	2				
23	1880									
24	1890									
	Southern states:									
25	1840	115	304,650	488		488				
26	1850	155	747,360	1,119		808	311			
27	1860	115	1,744,100	2,205	418,368	1,429	776		233	
28	1870	589	3,327,952	2,888	575,529	1,831	669	388	908	
29	1880	447	2,994,517	2,645	493,634	1,498	745	402	549	
30	1890 (b)	222	7,894,776	5,717	1,564,846	2,620	2,429	668	385	4
	Virginia:									
31	1840	41	112,350	222		222				
32	1850	121	392,640	668		478	190			
33	1860	45	463,600	494	106,692	381	113		50	
34	1870	68	435,375	278	58,705	190	50	32	116	
35	1880	48	456,750	365	71,720	251	95	19	54	
36	1890	35	845,221	444	117,023	293	120	31	54	
	North Carolina:									
37	1840	3	9,800	4		4				
38	1850	1	18,000	30		15	15			
39	1860	7	223,000	253	60,036	113	140		23	
40	1870	52	237,800	249	39,101	151	81	17	78	
41	1880	49	203,100	185	23,195	120	50	15	57	
42	1890	27	339,088	324	65,329	170	125	29	35	
	South Carolina:									
43	1840	3	4,300	6		6				
44	1850									
45	1860	1	50,000	92	11,400	37	55		10	
46	1870	15	25,900	53	3,815	32	13	8	25	
47	1880	11	7,900	13	1,173	13			11	
48	1890 (b)									
	Georgia:									
49	1840	1	2,000	10		10				
50	1850	3	68,000	78		40	38			
51	1860	11	242,500	383	63,348	167	216		30	
52	1870	46	936,585	563	122,138	251	191	121	72	
53	1880	32	180,733	142	25,070	72	45	25	42	
54	1890	14	298,539	179	32,401	81	71	27	20	
	Alabama:									
55	1840									
56	1850									
57	1860	6	140,000	198	34,116	95	103		14	
58	1870	14	22,375	41	4,881	38	1	2	24	
59	1880	14	28,900	18	3,037	13	5		15	
60	1890	6	18,325	16	3,125	11	5		6	
	Texas:									
61	1840									
62	1850	1	8,000	8		4	4			
63	1860	2	60,000	43	7,680	36	7		4	
64	1870	20	97,250	100	20,278	80	16	4	29	
65	1880	1	97,500	36	25,700	28	8		2	
66	1890	4	371,270	359	138,795	142	176	41	9	
	Mississippi:									
67	1840									
68	1850									
69	1860	4	75,500	235	22,620	202	33		13	
70	1870	11	195,250	116	28,800	34	31	51	17	
71	1880	8	331,500	218	53,100	111	61	46	15	
72	1890	7	1,553,455	1,082	306,270	415	443	224	31	

a Maryland and the District of Columbia are classed in this table as middle states for purposes of comparison

BY GEOGRAPHICAL DIVISIONS AND STATES AND TERRITORIES: 1840–1890—Continued.

AND KNIT GOODS.)

MACHINERY—cont'd.		Cost of materials used.	PRINCIPAL RAW MATERIALS—QUANTITIES CONSUMED.						Value of products.	
			Wool.			Hair, noils, etc. (Pounds.)	Cotton. (Pounds.)	Shoddy. (Pounds.)		
Looms.	Spindles.		Total (Pounds.)	Foreign. (Pounds.)	Domestic. (Pounds.)					
									$2,319,061	1
		$3,282,718	7,560,379						5,321,866	2
4,334	108,326	5,674,197	7,703,249				4,337,000		10,901,767	3
13,265	340,114	28,010,301	31,723,147	6,014,170	25,708,977		11,504,634	7,879,203	45,221,795	4
16,780	393,387	38,740,330	56,751,365	14,623,020	42,128,345	2,940,522	27,771,271	15,463,876	58,886,250	5
22,101	474,618	45,173,677	69,387,219	27,877,283	41,509,936	14,258,852	44,218,488	14,232,953	72,393,182	6
									104,700	7
		204,172	393,000						251,000	8
76	1,000	75,807	140,000				100,000		153,035	9
227	8,756	392,614	546,187	12,455	533,732		185,000	96,930	576,667	10
126	4,306	448,285	836,883	203,206	633,677	20,084	55,100	346,778	665,253	11
229	7,306	295,605	531,108	35,369	495,829		314,500	95,890	482,022	12
									235,900	13
		165,568	430,300						295,140	14
66	2,480	280,431	1,087,772				73,000		635,757	15
160	12,348	241,224	521,741	21,450	500,291		37,885	1,000	441,596	16
136	6,580	381,724	822,550		822,550	250	37,589	297,200	538,308	17
114	11,150	424,855	886,200	100,000	786,200		32,050	40,000	579,516	18
										19
		1,630	5,000						2,400	20
										21
3		1,747							2,600	22
										23
										24
									321,357	25
		750,203	2,448,026						1,293,642	26
296	16,544	1,634,730	5,042,682				421,800		2,840,550	27
1,322	50,311	2,715,827	5,912,589	1,200	5,911,389		616,459	2,762	4,278,311	28
1,315	47,989	2,736,023	6,021,980	85,000	5,936,980	500	1,455,408	279,647	3,958,571	29
3,788	106,541	4,000,966	8,730,576	357,790	8,372,786	61,741	5,395,513	1,188,847	6,700,545	30
									147,792	31
		488,899	1,554,110						841,013	32
121	7,574	389,204	1,131,000				10,000		717,827	33
137	6,236	317,800	742,200	1,200	741,000		27,260		488,352	34
154	8,486	383,080	862,812	5,000	857,812	500	104,170	60,500	577,968	35
212	12,382	375,175	975,745	25,367	950,378	1,500	105,112	88,585	609,809	36
									3,900	37
		13,950	30,000						23,750	38
20	1,000	151,005	504,500						291,000	39
97	2,806	166,497	355,693		355,693		10,000		298,638	40
30	2,374	255,707	576,145	80,000	496,145		118,464	12,444	303,160	41
169	10,990	198,358	449,260	50,760	398,500	40,374	282,860	40,000	308,946	42
									1,000	43
										44
		60,000	250,000						80,000	45
9	350	22,238	55,696		55,696		1,300	700	34,450	46
		19,455	48,950		48,950				24,075	47
										48
									3,000	49
		30,392	153,816						88,750	50
20	1,480	260,475	1,008,600				142,500		464,420	51
395	14,465	268,176	620,937		620,937		165,000		471,523	52
88	2,224	165,065	366,274		366,274		134,418		239,390	53
119	3,552	95,999	208,992	32,000	176,992	19,807	87,815	10,000	173,245	54
										55
										56
20	1,000	80,790	264,435				5,000		101,474	57
2	530	57,338	196,500		196,500		2,000		80,998	58
10	160	49,361	135,366		135,366		10,000		63,745	59
12	288	10,997	10,569		10,569		7,500	20,000	17,150	60
										61
		10,000	30,000						15,000	62
		25,980	81,900				18,000		38,706	63
30	1,070	86,817	278,045		278,045				152,968	64
12	600	44,435	175,000		175,000				80,500	65
135	1,900	185,607	572,400		572,400		103,000	1,000	359,230	66
										67
										68
21	1,000	119,840	270,597				75,600		158,507	69
30	344	79,566	154,790		154,790		32,700		147,323	70
121	3,734	211,646	494,033		494,033		205,896		299,605	71
376	9,196	508,039	1,565,824		1,565,824		416,000	36,000	924,185	72

b Includes reports from 2 establishments located (1) in Florida and (1) South Carolina. These establishments are not shown separately, in order that the operations of individual establishments may not be disclosed.

TABLE 1.—COMPARATIVE STATEMENT OF WOOL MANUFACTURE FOR THE UNITED STATES,

(EXCLUDING HOSIERY

	STATES AND TERRITORIES.	Number of establishments.	Capital.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.					MACHINERY.	
				Aggregates.		Males above 16 years.	Females above 15 years.	Children.	Cards.	Combing machines.
				Average number.	Total wages.					
	Arkansas:									
1	1840	1	$12,600	1		1				
2	1850									
3	1860									
4	1870	13	32,500	31	$6,870	29	2		17	
5	1880	25	85,550	90	13,226	62	21	7	29	
6	1890	6	27,435	31	6,231	16	12	3	7	
	Tennessee:									
7	1840	26	25,600	45		45				
8	1850	4	10,900	17		15	2			
9	1860	1	6,000	10	2,472	8	2		1	
10	1870	148	373,868	428	62,780	342	61	25	177	
11	1880	106	418,664	402	67,065	249	111	42	98	
12	1890	49	1,393,679	998	239,657	428	446	124	80	
	Florida:									
13	1840									
14	1850									
15	1860									
16	1870	1	500	1		1			1	
17	1880									
18	1890 (a)									
	Louisiana:									
19	1840									
20	1850									
21	1860	1	75,000	60	6,720	40	20		4	
22	1870	2	34,000	29	8,900	22	3	4	12	
23	1880									
24	1890									
	West Virginia:									
25	1840									
26	1850									
27	1860									
28	1870	74	236,100	316	59,828	207	79	30	132	
29	1880	55	203,170	353	44,161	226	96	31	72	
30	1890	30	336,281	287	61,919	171	105	11	41	
	Kentucky:									
31	1840	40	138,000	200		200				
32	1850	25	249,820	318		256	62			
33	1860	37	408,500	437	103,284	350	87		83	
34	1870	125	700,449	683	159,373	454	137	92	208	
35	1880	98	890,750	823	166,189	353	253	217	154	
36	1890	42	2,705,683	1,994	593,305	890	926	178	100	4
	Western states:									
37	1840	196	681,364	1,122		1,122				
38	1850	205	1,351,490	1,811		1,341	470			
39	1860	280	1,727,241	1,873	481,812	1,435	438		383	
40	1870	906	14,897,772	10,172	2,802,135	6,212	2,809	1,151	1,701	
41	1880	505	8,877,427	7,227	1,697,463	3,816	2,357	1,054	807	3
42	1890	287	13,254,918	7,720	2,412,634	3,756	3,535	429	574	15
	Ohio:									
43	1840	130	537,985	935		935				
44	1850	130	870,220	1,201		903	298			
45	1860	122	662,000	753	185,268	567	186		173	
46	1870	225	3,066,969	2,329	574,164	1,351	710	268	334	
47	1880	123	1,383,340	1,432	279,614	773	445	214	182	2
48	1890	69	2,479,872	1,431	449,026	686	591	154	104	5
	Indiana:									
49	1840	37	77,954	103		103				
50	1850	33	171,545	246		189	57			
51	1860	79	464,341	533	150,276	436	97		112	
52	1870	175	3,821,913	2,460	726,113	1,450	711	308	346	
53	1880	81	2,273,705	1,741	462,681	846	587	308	160	1
54	1890	46	2,969,356	2,147	609,868	911	1,124	112	135	4
	Illinois:									
55	1840	16	26,205	34		34				
56	1850	16	154,500	178		124	54			
57	1860	25	210,100	166	45,180	132	34		37	
58	1870	109	2,962,443	1,736	535,185	1,040	468	228	250	
59	1880	53	1,327,553	1,042	296,225	527	365	150	106	
60	1890	23	1,649,918	914	313,780	482	405	27	57	
	Michigan:									
61	1840	4	34,120	37		37				
62	1850	15	94,000	129		78	51			
63	1860	16	103,950	126	30,672	77	49		14	
64	1870	54	1,011,050	667	202,813	408	208	51	116	
65	1880	39	558,800	347	76,240	203	114	30	51	
66	1890	33	998,087	580	181,803	326	223	31	54	
	Wisconsin:									
67	1840									
68	1850	9	31,225	25		25				
69	1860	15	100,600	105	27,036	74	31		19	
70	1870	67	1,247,389	802	230,706	519	211	72	135	
71	1880	48	1,349,954	847	214,993	426	378	43	75	
72	1890	33	2,496,377	1,087	360,739	521	555	11	65	6

a See note b on page 75.

BY GEOGRAPHICAL DIVISIONS AND STATES AND TERRITORIES: 1840–1890—Continued.

AND KNIT GOODS.)

MACHINERY—cont'd.		Cost of materials used.	PRINCIPAL RAW MATERIALS—QUANTITIES CONSUMED.						Value of products.	
			Wool.			Hair, noils, etc. (Pounds.)	Cotton. (Pounds.)	Shoddy. (Pounds.)		
Looms.	Spindles.		Total. (Pounds.)	Foreign. (Pounds.)	Domestic. (Pounds.)					
									$129	1
										2
										3
		$55,782	115,330		115,330				78,690	4
41	1,360	85,972	189,000		189,000		30,600	300	127,430	5
24	735	28,030	67,500		67,500		5,550		38,360	6
									14,290	7
		1,675	6,200						6,310	8
	500	5,225	10,000						8,100	9
80	3,614	503,737	1,030,153		1,030,153		101,449	2,062	696,844	10
167	6,860	423,054	883,338		883,338		180,416	55,433	620,724	11
925	19,938	760,036	1,448,486	187,625	1,260,861		1,462,967	197,690	1,216,419	12
										13
										14
										15
		150	550		550				500	16
										17
										18
										19
										20
		31,300	69,150						45,200	21
100	4,000	19,047	50,325		50,325		1,500		30,795	22
										23
										24
										25
										26
										27
120	6,387	307,051	673,003		673,003				475,763	28
179	8,081	245,843	602,399		602,399		4,000	33,819	356,986	29
153	7,164	202,801	600,823	5,001	595,822		31,209	9,632	328,800	30
									151,246	31
		205,287	673,900						318,819	32
94	3,990	510,902	1,452,500				170,700		845,226	33
322	10,509	831,628	1,639,367		1,639,367		275,250		1,312,458	34
513	14,110	852,405	1,688,663		1,688,663		667,444	117,151	1,264,988	35
1,661	40,346	1,631,860	2,828,377	57,037	2,771,340		2,892,500	785,940	2,721,968	36
									778,448	37
		909,808	2,858,990						1,770,635	38
382	18,989	1,226,844	3,246,751						2,269,306	39
3,984	226,638	10,006,478	20,631,163	157,825	20,473,338		903,027	5,225	16,607,375	40
2,786	156,012	7,087,326	17,702,458	195,000	17,507,458	80,500	1,508,482	660,989	10,722,024	41
3,133	176,869	7,125,149	22,859,293	1,743,013	21,116,280	10,762	2,956,355	943,658	11,673,341	42
									685,757	43
		578,423	1,657,726						1,111,027	44
96	5,827	482,994	1,190,751						843,516	45
1,052	52,780	2,119,869	3,972,234	62,200	3,910,034		175,464		3,467,699	46
638	35,200	1,153,929	2,695,424	165,000	2,530,424	80,000	310,824	134,063	1,779,439	47
712	32,263	1,398,892	3,500,244	474,764	3,025,480	3,960	357,152	199,680	2,280,002	48
									58,867	49
		120,486	413,350						205,802	50
177	8,206	352,362	940,000						649,771	51
1,180	57,083	2,684,315	5,029,618	80,157	4,949,461		513,595		4,329,711	52
814	36,886	1,823,390	4,360,456	10,000	4,350,456		831,776	345,656	2,729,347	53
1,006	46,690	1,880,515	6,324,884	632,833	5,692,051	600	1,961,374	154,303	3,036,682	54
									9,540	55
		115,367	396,964						206,572	56
20	1,000	112,697	327,800						193,388	57
633	36,888	1,701,323	3,560,829		3,560,829		151,650		2,849,249	58
374	20,992	1,332,798	3,003,740		3,003,740		114,531	83,607	1,896,460	59
323	18,745	789,310	2,566,621	59,000	2,507,621		319,179	67,253	1,299,506	60
									9,734	61
		43,402	162,250						90,242	62
20	1,000	69,010	163,100						139,246	63
232	15,050	659,700	1,391,889		1,391,889		3,550		1,204,868	64
167	10,688	356,614	869,025		869,025		5,310	37,163	481,517	65
158	13,559	603,374	2,033,321	408,026	1,625,295		2,440	269,148	988,652	66
										67
		32,630	134,200						87,992	68
20	1,000	85,743	265,000						172,720	69
226	16,445	688,193	1,642,637	15,468	1,627,169		500		1,258,417	70
220	16,689	892,793	2,066,188		2,066,188	500	50,955	35,235	1,480,069	71
258	24,802	1,117,013	3,125,572	164,090	2,961,482	6,262	111,323	196,274	1,844,364	72

TABLE 1.—COMPARATIVE STATEMENT OF WOOL MANUFACTURE FOR THE UNITED STATES,

(EXCLUDING HOSIERY

	STATES AND TERRITORIES.	Number of establishments.	Capital.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.					MACHINERY.	
				Aggregates.		Males above 16 years.	Females above 15 years.	Children.	Cards.	Combing machines.
				Average number.	Total wages.					
	Iowa:									
1	1840									
2	1850	1	$10,000	7		7				
3	1860	12	82,500	120	$23,652	96	24		13	
4	1870	85	1,440,484	1,088	269,432	685	293	110	199	
5	1880	34	553,500	499	117,792	307	132	60	56	
6	1890	14	694,600	378	133,240	186	176	16	36	
	Missouri:									
7	1840	9	5,100	13		13				
8	1850	1	20,000	25		15	10			
9	1860	11	103,750	70	19,728	53	17		15	
10	1870	156	716,524	718	137,408	548	85	85	258	
11	1880	98	726,150	680	109,877	412	144	133	126	
12	1890	35	720,616	510	122,410	261	190	59	52	
	Kansas:									
13	1840									
14	1850									
15	1860									
16	1870	9	96,000	91	30,682	56	24	11	24	
17	1880	5	131,925	124	25,825	66	40	18	9	
18	1890 (*a*)									
	Minnesota:									
19	1840									
20	1850									
21	1860									
22	1870	10	246,600	146	45,592	77	60	9	19	
23	1880	13	190,500	229	46,108	106	73	50	21	
24	1890	21	563,771	341	120,967	193	147	1	37	
	Utah:									
25	1840									
26	1850									
27	1860									
28	1870	15	223,400	106	48,040	58	39	9	19	
29	1880	11	382,000	277	68,108	150	79	48	21	
30	1890	9	579,209	274	104,156	165	95	14	31	
	New Mexico:									
31	1840									
32	1850									
33	1860									
34	1870	1	65,000	20	2,000	20			1	
35	1880									
36	1890									
	All other western states: (*a*)									
37	1890	4	103,112	58	16,645	25	29	4	5	
	Pacific states:									
38	1840									
39	1850									
40	1860	2	170,000	90	49,800	67	23		10	
41	1870	14	2,174,200	838	342,413	773	39	86	67	
42	1880	20	2,283,300	1,080	424,406	892	149	39	83	
43	1890	14	3,969,065	1,666	462,971	1,167	452	47	91	
	California:									
44	1840									
45	1850									
46	1860	1	100,000	60	33,600	40	20		6	
47	1870	5	1,785,000	659	230,200	584	31	44	46	
48	1880	9	1,670,500	835	334,318	708	108	19	60	
49	1890	8	2,618,480	1,204	287,658	922	318	24	70	
	Oregon:									
50	1840									
51	1850									
52	1860	1	70,000	30	16,200	27	3		4	
53	1870	9	389,200	179	112,213	129	8	42	21	
54	1880	10	566,800	216	80,088	166	33	17	21	
55	1890	6	1,350,585	402	175,313	245	134	23	21	
	Washington:									
56	1840									
57	1850									
58	1860									
59	1870									
60	1880	1	40,000	29	4,000	18	8	3	2	
61	1890									

a Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Idaho, 1; Kansas, 1; South Dakota, 2.

BY GEOGRAPHICAL DIVISIONS AND STATES AND TERRITORIES: 1840–1890—Continued.

AND KNIT GOODS.)

MACHINERY—cont'd.		Cost of materials used.	PRINCIPAL RAW MATERIALS—QUANTITIES CONSUMED.						Value of products.	
			Wool.			Hair, noils, etc. (Pounds.)	Cotton. (Pounds.)	Shoddy. (Pounds.)		
Looms.	Spindles.		Total. (Pounds.)	Foreign. (Pounds.)	Domestic. (Pounds.)					
									$800	1
20	1,000	$3,500	14,500						13,000	2
374	31,462	67,293	108,700						127,640	3
166	11,025	998,073	2,273,428		2,273,428		23,148	1,225	1,647,606	4
158	10,828	435,747	1,407,510		1,407,510		18,597	865	679,904	5
		505,503	1,880,532	300	1,880,232		10,610	46,000	695,218	6
									13,750	7
		16,000	80,000						56,000	8
29	896	56,745	191,400						143,025	9
183	10,371	849,313	1,979,671		1,979,671		25,500		1,256,213	10
193	12,622	681,711	1,811,635		1,811,635		115,227	4,000	930,961	11
261	12,984	311,881	1,052,229	4,000	1,048,229		155,395	7,000	548,457	12
										13
										14
										15
29	1,616	86,105	200,000		200,000		1,300		153,150	16
41	2,636	107,251	364,000		364,000		23,200	2,000	211,525	17
										18
										19
										20
										21
39	2,664	108,540	254,857		254,857				219,862	22
59	3,852	155,867	557,580	20,000	537,580		6,365	18,000	253,378	23
125	7,510	309,378	1,358,290		1,358,290			4,000	539,995	24
										25
										26
										27
31	1,430	98,272	276,000		276,000		8,320		199,600	28
114	5,422	147,226	566,900		566,900		31,697	1,000	279,424	29
99	7,960	163,864	800,500		800,500		38,632		338,534	30
										31
										32
										33
5	240	12,775	50,000		50,000			4,000	21,000	34
										35
										36
33	1,528	45,419	217,100		217,100		250		101,931	37
										38
										39
45	780	77,000	550,000						235,000	40
275	8,200	835,736	2,871,400		2,871,400		100,000	1,800	1,608,611	41
298	23,388	1,277,025	4,720,100	20,000	4,700,100	25,000	234,026	95,150	2,253,888	42
387	24,650	1,116,418	5,065,619	145,000	4,920,619		213,864	58,111	1,939,965	43
										44
										45
30	500	50,000	400,000						150,000	46
185	3,880	608,141	1,928,000		1,928,000		100,000	1,800	1,102,754	47
230	18,740	997,539	3,574,850	20,000	3,554,850	25,000	228,026	94,150	1,634,858	48
292	18,598	788,916	3,699,471	145,000	3,554,471		107,318	53,111	1,325,033	49
										50
										51
15	280	27,000	150,000						85,000	52
90	4,320	227,595	943,400		943,400				505,857	53
56	4,248	227,486	985,250		985,250		6,000	1,000	549,030	54
95	6,052	327,502	1,366,148		1,366,148		106,546	5,000	614,932	55
										56
										57
										58
										59
12	400	52,000	160,000		160,000				70,000	60
										61

TABLE 2.—COMPARATIVE STATEMENT OF HOSIERY AND KNIT GOODS MANUFACTURE FOR THE

	STATES AND TERRITORIES	Number of establishments.	Capital.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.					MACHINERY.					
				Aggregates.		Males above 16 years.	Females above 15 years.	Children.	Cards.	Combing machines.	Knitting machines.	Sewing machines.	Looms.	Spindles.
				Average number.	Total wages.									
	United States:													
1	1840 (*a*)													
2	1850 (*b*)	85	$544,735	2,325	$360,336	835	1,490							
3	1860	197	4,035,510	9,103	1,661,972	2,780	6,323							
4	1870	248	10,931,260	14,788	4,429,085	4,252	7,991	2,545	519		5,625	1,668	438	148,385
5	1880	359	15,579,591	28,885	6,701,475	7,517	17,707	3,661	592	3	12,659	4,569	1,964	143,023
6	1890	796	c50,607,738	61,209	18,263,272	16,366	40,927	3,916	1,183	16	36,327		149	389,353
	New England states:													
7	1840													
8	1850													
9	1860	47	1,534,700	2,165	487,440	815	1,350							
10	1870	84	4,021,660	5,280	1,808,335	1,678	3,059	543	236		2,466	760	214	82,656
11	1880	103	5,156,306	7,818	1,918,715	2,130	4,969	719	207		2,626	816	1,085	46,047
12	1890	168	14,538,511	13,503	4,344,884	3,828	9,208	467	329	9	8,638		5	147,825
	Maine:													
13	1840													
14	1850													
15	1860													
16	1870													
17	1880	1	500	21	801	1	20							
18	1890	4	28,095	260	30,165	6	254				91			
	New Hampshire:													
19	1840													
20	1850													
21	1860	12	133,000	488	76,188	138	350							
22	1870	28	855,460	1,081	405,003	344	624	113	58		832	102	20	17,175
23	1880	24	1,224,000	1,753	536,117	540	1,098	115	66		992	118	147	17,540
24	1890	37	2,706,065	3,178	989,130	1,062	2,040	76	112		3,032			36,526
	Vermont:													
25	1840													
26	1850													
27	1860	2	21,500	93	15,792	30	63							
28	1870	7	303,000	331	90,179	89	216	26	23		49	53		26,300
29	1880	6	492,000	383	101,037	138	227	18	22		69	94		3,805
30	1890	10	754,882	718	269,844	275	438	5	37		221			9,584
	Massachusetts:													
31	1840													
32	1850													
33	1860	15	155,200	388	94,692	166	222							
34	1870	32	1,570,500	2,415	848,864	844	1,404	167	79		1,116	312	180	19,331
35	1880	57	1,467,375	3,411	608,067	786	2,413	212	38		813	257	545	9,028
36	1890	74	4,497,940	4,675	1,495,260	1,127	3,418	130	52		3,344		5	40,822
	Rhode Island:													
37	1840													
38	1850													
39	1860													
40	1870	3	133,000	120	33,200	37	64	19	6		33		5	1,800
41	1880	1	6,000	39	8,400	6	24	9			32	7	4	
42	1890	16	1,728,618	1,538	487,350	365	1,024	149	14	2	755			15,825
	Connecticut:													
43	1840													
44	1850													
45	1860	18	1,225,000	1,196	300,768	481	715							
46	1870	14	1,159,700	1,333	431,089	364	751	218	70		436	293	9	18,050
47	1880	14	1,966,431	2,211	664,293	659	1,187	365	79		720	340	380	15,674
48	1890	27	4,822,911	3,134	1,073,135	993	2,034	107	114	7	1,195			45,068
	Middle states:													
49	1840													
50	1850													
51	1860	134	2,476,210	6,888	1,160,624	1,928	4,960							
52	1870	141	6,873,300	9,365	2,596,360	2,524	4,843	1,998	282		3,091	906	213	65,717
53	1880	190	9,883,486	18,201	4,451,850	5,046	10,645	2,510	378	3	8,423	3,681	833	95,316
54	1890	460	30,231,762	37,823	11,574,128	10,908	24,138	2,777	779	7	20,838		121	213,023
	New York:													
55	1840													
56	1850													
57	1860	22	1,102,500	2,701	392,924	597	2,104							
58	1870	60	3,318,700	3,741	1,122,890	1,061	1,899	781	230		746	620	20	49,441
59	1880	75	5,334,876	7,858	2,036,076	2,389	4,470	999	320		1,311	1,953	103	71,008
60	1890	201	19,608,331	20,299	6,437,308	6,862	12,612	825	701	4	5,434		78	186,057
	New Jersey:													
61	1840													
62	1850													
63	1860	7	477,200	1,491	225,060	329	1,162							
64	1870	4	575,500	722	193,200	136	271	315	13		11	138	147	6,480
65	1880	8	804,570	1,070	239,761	320	604	146	23		343	75		6,048
66	1890	15	1,352,143	1,277	342,600	399	761	117	33		694			9,548
	Pennsylvania:													
67	1840													
68	1850													
69	1860	103	895,460	2,692	541,116	998	1,694							
70	1870	76	2,979,000	4,899	1,280,270	1,325	2,672	902	99		2,332	148	46	9,796
71	1880	106	3,743,790	9,272	2,175,913	2,337	5,570	1,365	35	3	6,769	1,653	730	18,260
72	1890	236	9,121,632	15,941	4,732,754	3,608	10,563	1,770	45	3	14,492		43	17,418

a Not separately reported.
b At the census of 1850 totals for the different states were not published, totals for the United States only being given.

UNITED STATES, BY GEOGRAPHICAL DIVISIONS AND STATES AND TERRITORIES: 1840–1890.

Cost of materials used.	PRINCIPAL RAW MATERIALS—QUANTITIES CONSUMED.									Value of products.	
	Wool.			Merino yarn. (Pounds.)	Woolen yarn. (Pounds.)	Worsted yarn. (Pounds.)	Cotton, cotton warp, and yarn. (Pounds.)	Hair, noils, etc. (Pounds.)	Shoddy. (Pounds.)		
	Total. (Pounds.)	Foreign. (Pounds.)	Domestic. (Pounds.)								
											1
$415,113										$1,028,102	2
3,202,317	2,927,626						3,892,342			7,280,606	3
9,835,823	5,596,955	292,300	5,304,655		2,229,777		13,652,225		189,857	18,411,564	4
15,210,951	8,594,895	448,758	8,146,137	67,561	3,753,566	759,255	28,485,238	66,929	1,523,263	29,167,227	5
35,861,585	21,639,393	2,734,304	18,905,089		6,386,370	4,146,035	64,681,466	424,496	4,735,144	67,241,013	6
											7
											8
1,092,358	1,457,260						1,693,001			2,374,242	9
3,282,123	2,483,733	141,500	2,342,233		315,419		4,033,943		10,000	6,910,797	10
4,034,873	4,348,024	209,440	4,138,584		674,986	106,201	3,977,864	26,779	366,843	7,912,916	11
8,661,685	8,398,436	1,035,183	7,363,253		869,432	1,020,615	12,214,509	128,525	1,081,598	16,034,801	12
											13
											14
											15
											16
1,800					2,000					3,000	17
33,839					29,075	12,320	6,000			76,603	18
											19
											20
338,075	362,120						308,280			573,794	21
881,646	880,750	40,500	840,250				946,235			1,757,445	22
1,249,600	1,756,332	76,600	1,680,332		96,500	2,500	1,102,284	5,000	186,900	2,362,779	23
1,777,505	3,456,174	243,850	3,212,324		96,658	106,478	841,739	4,200	960,998	3,481,922	24
											25
											26
61,840	130,000						50,000			102,800	27
191,219	146,289		146,289				384,789			551,129	28
359,938	401,333		401,333		1,200	500	406,539		2,525	595,270	29
649,004	576,669	66,000	510,669		2,000		666,448		16,882	1,105,958	30
											31
											32
132,075	196,000						148,000			314,120	33
1,515,326	904,900	25,000	879,900		249,356		1,849,994			3,213,481	34
1,394,748	1,088,684	7,266	1,081,418		502,511	88,619	857,700		8,000	2,483,596	35
2,552,705	1,812,076	52,989	1,759,087		456,440	278,853	4,466,465		44,500	5,082,087	36
											37
											38
											39
68,541	113,000		113,000				30,000			137,000	40
14,838					22,750					36,000	41
1,618,621	788,311	140,000	648,311		108,150	445,633	3,337,264		12,218	2,516,664	42
											43
											44
560,368	769,140						1,186,721			1,383,528	45
625,391	438,794	76,000	362,794		66,063		822,925		10,500	1,251,742	46
1,013,949	1,101,675	126,174	975,501		50,025	14,582	1,011,341	21,779	169,418	2,432,271	47
2,029,921	1,765,206	532,344	1,232,862		177,100	177,331	2,896,593	124,325	47,000	3,771,567	48
											49
											50
2,082,344	1,462,866						2,195,341			4,847,984	51
6,505,973	3,112,622	150,800	2,961,822		1,871,183		9,601,982		179,857	11,405,380	52
10,254,739	4,006,871	239,318	3,767,553	67,561	2,327,394	614,404	24,305,874	40,150	1,146,420	19,696,588	53
23,059,630	10,083,581	1,081,363	9,002,218		3,188,204	2,741,794	47,428,283	241,049	3,174,904	42,993,045	54
											55
											56
870,479	689,066						1,348,941			1,944,090	57
3,391,840	2,168,822	150,800	2,018,022		50,500		7,119,839		179,857	5,528,742	58
5,072,058	2,548,969	186,326	2,362,643		538,467	46,159	16,164,505	40,000	1,062,011	9,899,540	59
13,669,169	9,024,692	882,065	8,142,627		1,034,837	695,260	27,982,069	215,195	3,069,939	24,776,582	60
											61
											62
279,952	419,800						766,400			783,456	63
188,030	230,000		230,000		1,000		216,700			568,900	64
258,043	175,184	5,400	169,784		106,300	3,100	487,026	150	15,553	861,181	65
582,783	404,847	188,839	216,008		113,600	36,629	842,202	10,673	18,623	1,091,403	66
											67
											68
928,915	354,000						80,000			2,114,315	69
2,925,323	713,800		713,800		1,819,183		2,264,943			5,306,738	70
4,024,138	1,282,718	47,592	1,235,126	67,561	1,682,127	565,145	7,654,343		68,856	8,935,147	71
8,720,363	654,042	10,459	643,583		1,985,017	1,995,905	18,488,312	15,181	86,342	16,944,237	72

c Value of hired property is not included in the capital reported in 1890, because it was not included in the reports of previous census years.

TABLE 2.—COMPARATIVE STATEMENT OF HOSIERY AND KNIT GOODS MANUFACTURE FOR THE

	STATES AND TERRITORIES.	Number of establishments.	Capital.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.					MACHINERY.					
				Aggregates.		Males above 16 years.	Females above 15 years.	Children.	Cards.	Combing machines.	Knitting machines.	Sewing machines.	Looms.	Spindles.
				Average number.	Total wages.									
	Maryland: (a)													
1	1840													
2	1850													
3	1860	2	$1,050	4	$1,524	4								
4	1870	1	100	3		2	1				2			
5	1880	1	250	1	100		1							
6	1890	8	149,656	306	61,466	39	202	65			218			
	Western states:													
7	1840													
8	1850													
9	1860	13	21,900	46	12,228	33	13							
10	1870	23	36,300	143	24,390	50	89	4	1		68	2	11	12
11	1880	65	534,799	2,862	330,210	339	2,093	430	7		1,609	72	42	1,660
12	1890	146	5,190,366	8,369	2,031,200	1,389	6,687	293	60		6,056		5	22,152
	Ohio:													
13	1840													
14	1850													
15	1860	11	10,900	36	9,264	23	13							
16	1870	5	9,400	22	5,250	16	6				7		10	
17	1880	23	187,000	745	94,858	53	574	118			368	4	30	60
18	1890	44	1,071,007	1,898	466,630	168	1,655	75	8		1,574		5	2,456
	Indiana:													
19	1840													
20	1850													
21	1860													
22	1870	5	4,050	26	540	7	18	1			9	1		
23	1880	5	45,000	284	24,700	26	201	57			183	5		
24	1890	9	716,989	962	207,519	307	594	61	18		670			7,392
	Illinois:													
25	1840													
26	1850													
27	1860													
28	1870	3	1,800	27	1,800	4	21	2	1		19	1		12
29	1880	14	105,800	707	92,385	160	471	76	3		433	48	11	680
30	1890	35	1,254,576	1,878	545,109	349	1,483	46	14		1,525			5,824
	Michigan:													
31	1840													
32	1850													
33	1860													
34	1870													
35	1880	11	147,389	962	92,324	80	706	176	4		521	9		920
36	1890	10	560,917	848	208,344	163	684	1	14		678			3,680
	Wisconsin:													
37	1840													
38	1850													
39	1860													
40	1870													
41	1880	4	10,010	28	3,364	6	20	2			19	4		
42	1890	23	1,214,727	2,296	449,724	335	1,856	105	6		1,138			2,800
	Iowa:													
43	1840													
44	1850													
45	1860													
46	1870	2	5,200	6	1,200	3	3							
47	1880	3	2,200	6	460	3	3				7			
48	1890	3	8,950	9	2,550	3	6				14			
	Missouri:													
49	1840													
50	1850													
51	1860	2	11,000	10	2,964	10								
52	1870	7	15,700	61	15,600	19	41	1			33			
53	1880	4	29,400	118	19,300	3	114	1			68			
54	1890	7	33,247	125	34,477	7	118				145			
	Minnesota:													
55	1840													
56	1850													
57	1860													
58	1870	1	150	1		1							1	
59	1880	1	8,000	12	2,819	8	4				10	2	1	
60	1890	3	247,498	129	46,356	27	102				152			
	Utah:													
61	1840													
62	1850													
63	1860													
64	1870													
65	1880													
66	1890	5	33,370	70	17,020	5	60	5			73			
	All other western states: (b)													
67	1890	7	49,085	154	53,471	25	129				87			

a Maryland is classed in this table as a middle state for purposes of comparison.

UNITED STATES, BY GEOGRAPHICAL DIVISIONS AND STATES AND TERRITORIES: 1840–1890—Continued.

Cost of materials used.	PRINCIPAL RAW MATERIALS—QUANTITIES CONSUMED.								Value of products.	
	Wool.			Merino yarn. (Pounds.)	Woolen yarn. (Pounds.)	Worsted yarn. (Pounds.)	Cotton, cotton warp, and yarn. (Pounds.)	Hair, noils, etc. (Pounds.)	Shoddy. (Pounds.)	
	Total. (Pounds.)	Foreign. (Pounds.)	Domestic. (Pounds.)							
										1
										2
$2,998									$6,123	3
780					500		500		1,000	4
500					500				720	5
87,315					54,750	14,000	115,700		180,823	6
										7
										8
21,715	6,500						4,000		46,680	9
47,727	600		600		43,175		16,300		95,387	10
919,639	240,000		240,000		749,786	29,650	201,500		1,555,123	11
3,680,462	3,100,876	617,758	2,483,118		2,328,534	383,626	2,658,199	54,922	338,642	7,240,031	12
										13
										14
13,515	6,500						4,000			31,800	15
10,360					10,600					23,100	16
241,583					241,850	3,850	6,000			418,825	17
914,085	359,000	4,000	355,000		851,313	145,857	296,392		5,000	1,635,948	18
										19
										20
										21
2,842					2,575					5,450	22
103,280					76,300	5,200	30,000			158,200	23
408,195	1,095,253	568,758	526,495		74,098	3,342	292,826	25,762	143,572	827,104	24
										25
										26
										27
5,775	600		600		5,100		100			8,800	28
290,895	60,000		60,000		226,800	10,000	112,900			484,124	29
980,780	818,500		818,500		251,020	72,480	1,348,620	17,500	27,920	1,900,035	30
										31
										32
										33
										34
226,627	180,000		180,000		154,600	5,000	41,300		10,000	377,249	35
285,057	247,081	25,000	222,081		121,667	19,400	332,955		30,937	701,322	36
										37
										38
										39
										40
9,125					7,100	700				18,817	41
899,371	581,042	20,000	561,042		886,786	84,047	267,906	11,660	131,213	1,635,641	42
										43
										44
										45
1,510					300		600			2,887	46
1,554					1,536					2,908	47
1,975					1,275		3,000			5,763	48
										49
										50
8,200										14,880	51
27,040					24,400		15,600			54,650	52
41,575					36,600	4,500	11,300			85,000	53
30,524					30,325		37,500			81,445	54
										55
										56
										57
200					200					500	58
5,000					5,000	400				10,000	59
87,662					64,000	41,000	42,000			183,743	60
										61
										62
										63
										64
										65
25,475					31,375	2,500	500			53,560	66
47,338					16,675	15,000	36,500			125,470	67

b Includes states having less than 3 establishments in this branch of industry, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: California, 2; Colorado, 2; Kansas, 1; Nebraska, 1; Washington, 1.

TABLE 2.—COMPARATIVE STATEMENT OF HOSIERY AND KNIT GOODS MANUFACTURE IN THE UNITED

	STATES.		Number of establishments.	Capital.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.					MACHINERY.				
					Aggregates.		Males above 16 years.	Females above 15 years.	Children.	Cards.	Combing machines.	Knitting machines.	Looms.	Spindles.
					Average number.	Total wages.								
1	Southern states (*a*)	1860	3	$2,700	4	$1,680	4	.....	.....	.....	.....	.....	.....	.....
2		1880	1	5,000	4	700	2	.....	2	.....	.....	1	4	.....
3		1890	22	647,099	1,514	313,060	241	894	379	15	.....	795	18	6,353
4	Alabama	1890	3	94,373	412	64,838	25	137	250	2	.....	128	.....	.....
5	Georgia	1890	4	121,494	349	71,952	54	221	74	2	.....	225	.....	960
6	Kentucky	1860	3	2,700	4	1,680	4	.....	.....	.....	.....	.....	.....	.....
7	Louisiana	1890	3	106,600	284	51,841	26	258	.....	.....	.....	169	.....	1,800
8	North Carolina	1890	5	72,900	184	30,410	24	105	55	.....	.....	136	.....	512
9	West Virginia	1880	1	5,000	4	700	2	.....	2	.....	.....	1	4	.....
10	All other southern states (*b*)	1890	7	251,732	285	94,019	112	173	.....	11	.....	137	18	3,081

a With the exception of Kentucky, the states in this group did not manufacture hosiery and knit goods until 1880.

STATES, BY GEOGRAPHICAL DIVISIONS AND STATES AND TERRITORIES: 1840–1890—Continued.

Cost of materials used.	PRINCIPAL RAW MATERIALS—QUANTITIES CONSUMED.									Value of products.	
	Wool.			Merino yarn. (Pounds.)	Woolen yarn. (Pounds.)	Worsted yarn. (Pounds.)	Cotton, cotton warp, and yarn. (Pounds.)	Hair, noils, etc. (Pounds.)	Shoddy. (Pounds.)		
	Total. (Pounds.)	Foreign. (Pounds.)	Domestic. (Pounds.)								
$5,900	1,000	.....	.....	.....	.....	.....	.....	.....	.....	$11,700	1
1,700	.....	.....	.....	.....	1,400	.....	.....	.....	.....	2,600	2
459,808	56,500	.....	56,500	.....	200	.....	2,380,475	.....	140,000	973,136	3
103,893	.....	.....	.....	.....	.....	.....	545,400	.....	.....	190,725	4
70,697	.....	.....	.....	.....	.....	.....	486,340	.....	.....	166,850	5
5,900	1,000	.....	.....	.....	.....	.....	.....	.....	.....	11,700	6
58,202	.....	.....	.....	.....	.....	.....	420,000	.....	.....	151,180	7
66,925	.....	.....	.....	.....	.....	.....	277,000	.....	.....	126,875	8
1,700	.....	.....	.....	.....	1,400	.....	.....	.....	.....	2,600	9
160,091	56,500	.....	56,500	.....	200	.....	651,735	.....	140,000	337,506	10

b Includes states having less than 3 establishments in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Florida, 1; Kentucky, 2; Virginia, 2; West Virginia, 2.

TABLE 3.—STATISTICS OF WOOL MANUFACTURE,

	STATES AND TERRITORIES.	Number of establishments.	CAPITAL.				Miscellaneous expenses.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.	
				Direct investment.				Aggregates.	
			Value of hired property.	Aggregate.	Land, buildings, and machinery.	Live assets.		Average number.	Total wages.
1	The United States	2,489	$17,320,780	$296,494,481	$129,721,571	$166,772,910	$19,249,508	219,132	$76,660,742
2	Alabama	9	400	112,698	76,473	36,225	3,841	428	67,963
3	Arkansas	6	.....	27,435	21,800	5,635	752	31	6,231
4	California	10	104,870	2,661,480	1,540,603	1,120,877	171,035	1,375	328,824
5	Connecticut	98	660,334	23,794,374	9,386,218	14,408,156	1,499,495	13,047	4,940,783
6	Delaware	3	.....	450,974	257,000	193,974	27,404	297	103,395
7	Georgia	18	.....	420,033	305,940	114,093	21,492	528	104,353
8	Illinois	58	337,000	2,904,494	1,103,072	1,801,422	178,282	2,792	858,889
9	Indiana	55	57,725	3,686,345	1,703,246	1,983,099	305,940	3,109	817,387
10	Iowa	17	18,000	703,550	301,800	401,750	40,469	387	135,790
11	Kentucky	44	120,700	2,766,683	1,335,527	1,431,156	186,443	2,042	615,055
12	Louisiana	4	12,900	110,000	77,100	32,900	2,726	286	52,517
13	Maine	82	89,400	9,484,925	3,956,686	5,528,239	594,324	5,453	1,991,676
14	Maryland	17	8,600	522,531	285,099	237,432	24,189	689	185,397
15	Massachusetts	293	3,415,001	71,066,526	28,378,202	42,688,324	4,900,703	43,038	16,154,034
16	Michigan	43	142,400	1,559,004	677,397	881,607	118,181	1,428	390,147
17	Minnesota	24	56,300	811,269	437,611	373,658	70,556	470	167,323
18	Mississippi	7	.....	1,553,455	876,030	677,425	18,054	1,082	306,270
19	Missouri	42	46,050	753,863	484,935	268,928	33,578	635	156,887
20	New Hampshire	89	224,900	14,721,786	5,304,506	9,417,280	858,253	9,400	3,341,695
21	New Jersey	50	321,983	7,793,714	3,923,511	3,870,203	649,032	7,248	2,416,371
22	New York	339	2,223,622	46,461,914	22,560,855	23,901,059	2,624,573	37,992	13,033,901
23	North Carolina	32	6,200	411,988	227,330	184,658	17,855	508	95,739
24	Ohio	113	192,810	3,550,879	1,609,893	1,940,986	205,041	3,329	915,656
25	Oregon	6	.....	1,350,585	342,820	1,007,765	86,906	402	175,313
26	Pennsylvania	703	6,305,859	61,142,888	28,086,739	33,056,149	3,963,798	55,354	19,764,386
27	Rhode Island	85	2,552,476	26,039,361	11,660,236	14,379,125	1,978,752	19,325	7,049,109
28	Tennessee	49	2,700	1,393,679	672,013	721,666	56,263	998	239,657
29	Texas	4	.....	371,270	256,130	115,140	17,333	359	138,795
30	Utah	14	28,250	612,579	297,045	315,534	29,301	344	121,176
31	Vermont	39	173,500	4,059,264	1,472,666	2,586,598	241,573	2,303	895,284
32	Virginia	37	38,625	941,071	494,087	446,984	69,537	612	166,798
33	West Virginia	32	3,800	343,881	171,970	171,911	15,708	307	67,380
34	Wisconsin	56	164,825	3,711,104	1,332,273	2,378,831	226,851	3,383	810,463
35	All other states (b)	11	11,550	198,879	104,758	94,121	11,266	151	46,098

a Includes pieceworkers and their wages.

ALL CLASSES, BY STATES AND TERRITORIES: 1890.

AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES—continued.											POWER.			
Officers, firm members, and clerks.			Operatives and skilled. (a)				Unskilled.				Steam.			
Males above 16 years.	Females above 15 years.	Wages.	Males above 16 years.	Females above 15 years.	Children.	Wages.	Males above 16 years.	Females above 15 years.	Children.	Wages.	Number of boilers.	Number of engines.	Horse power.	
5,050	223	$5,742,848	89,063	105,338	14,506	$69,050,823	4,333	432	187	$1,867,071	3,077	1,798	152,009	1
6	.....	3,053	29	142	250	64,610	1	.....	.....	300	3	3	115	2
9	.....	2,950	7	12	3	3,281	.....	.....	.....	.....	2	2	35	3
44	.....	44,590	861	418	24	276,411	28	.....	.....	7,823	15	11	1,450	4
227	4	342,728	6,403	5,510	555	4,460,816	277	43	28	137,239	204	100	8,543	5
7	2	12,298	131	110	39	87,625	8	.....	.....	3,472	7	4	230	6
28	.....	17,227	95	292	101	83,654	12	.....	.....	3,472	3	4	59	7
119	4	119,084	678	1,344	70	716,695	34	40	3	23,110	45	33	1,414	8
127	8	117,550	1,053	1,710	172	686,162	38	.....	1	13,675	64	44	2,183	9
38	2	29,670	136	178	15	99,623	15	2	1	6,497	13	8	350	10
89	4	93,228	798	927	178	505,203	36	10	.....	16,624	44	31	2,046	11
7	.....	9,514	20	258	.....	42,643	1	.....	.....	360	2	1	110	12
124	5	138,791	2,962	2,005	150	1,780,960	205	2	.....	71,925	68	18	3,341	13
24	.....	21,350	207	320	133	161,847	5	.....	.....	2,200	10	7	353	14
697	40	1,020,088	20,660	18,725	1,831	14,683,068	1,001	73	11	441,878	615	338	35,687	15
74	3	59,498	391	904	32	323,068	24	.....	.....	7,581	35	26	915	16
34	1	34,381	180	248	1	130,217	6	.....	.....	2,725	14	12	327	17
13	.....	11,280	396	443	224	293,190	6	.....	.....	1,800	10	7	583	18
58	4	31,476	198	304	59	122,513	12	.....	.....	2,898	28	27	748	19
170	7	219,519	3,961	4,688	248	3,007,647	207	107	12	114,529	80	41	2,856	20
124	2	163,553	3,091	3,546	336	2,192,612	149	.....	.....	60,206	112	53	5,342	21
802	26	974,723	13,629	20,772	2,123	11,819,654	598	31	11	239,524	393	248	21,574	22
30	.....	13,561	146	230	84	77,895	18	.....	.....	4,283	13	10	257	23
166	7	153,358	648	2,238	220	747,193	40	1	.....	15,105	86	71	2,291	24
44	.....	32,775	185	134	23	136,983	16	.....	.....	5,555	.....	.....	.....	25
1,340	88	1,384,833	20,693	26,646	5,406	17,923,026	1,038	67	76	456,527	842	498	42,025	26
276	4	366,744	8,672	8,090	1,839	6,521,318	363	44	37	161,047	242	111	14,663	27
69	2	48,620	335	441	120	182,536	24	3	4	8,501	20	15	772	28
17	.....	18,115	113	176	41	115,980	12	.....	.....	4,700	5	4	225	29
20	.....	16,575	145	155	19	103,001	5	.....	.....	1,600	7	5	277	30
57	.....	56,234	1,085	1,039	40	810,438	80	.....	2	28,612	31	18	1,580	31
46	1	23,745	297	224	31	140,059	13	.....	.....	2,994	6	5	247	32
36	1	13,282	136	117	10	53,130	6	.....	1	968	19	17	525	33
120	6	134,150	682	2,396	116	657,422	54	9	.....	18,891	34	21	810	34
8	2	5,305	40	96	4	40,343	1	.....	.....	450	5	5	137	35

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Colorado, 2; Florida, 1; Idaho, 1; Kansas, 2; Nebraska, 1; South Carolina, 1; South Dakota, 2; Washington, 1.

TABLE 3.—STATISTICS OF WOOL MANUFACTURE, ALL

	STATES AND TERRITORIES.	POWER—continued.						MACHINERY.						
		Water.				Other power.		Cards. (Sets.)	Combing machines.		Spindles.			Looms.
		Water wheels.		Turbine wheels.		Number of motors.	Horse power.		Foreign.	American.	Woolen.	Worsted	Cotton.	
		Number.	Horse power.	Number.	Horse power.									
1	The United States	569	21,678	1,012	63,045	45	672	8,198	674	181	2,329,099	657,324	196,077	69,807
2	Alabama	4	52	2	35			8			160		128	12
3	Arkansas	2	45	1	10			7			735			24
4	California			1	80	1	7	70			18,598			292
5	Connecticut	29	2,228	91	5,685	2	45	646	34		198,326	26,656	5,000	3,640
6	Delaware			4	213			15			7,306			229
7	Georgia	7	135	7	292	1	15	22			4,512			119
8	Illinois			6	285	2	24	71			24,569			323
9	Indiana	9	327	14	364			153		4	48,082		6,000	1,006
10	Iowa	1	12	13	357			36			10,828			158
11	Kentucky	11	112	5	120	2	46	104	3	1	37,971	3,200		1,679
12	Louisiana					1	7	1					1,850	2
13	Maine	44	2,107	68	5,560			387	5		119,418		7,000	2,020
14	Maryland	4	57	6	212			30			8,294		2,856	114
15	Massachusetts	84	4,235	234	21,359			1,837	197	68	541,626	190,814	48,334	16,354
16	Michigan	5	130	13	369			68			17,239			158
17	Minnesota	10	101	5	479			37			7,510			125
18	Mississippi			2	75			31			9,196			376
19	Missouri	7	82	1	10	1	5	52			12,964		20	261
20	New Hampshire	22	1,409	112	6,449	1	5	492	25	4	148,870	21,304	3,000	4,049
21	New Jersey	10	316	20	1,001	2	2	235	26	3	63,065	23,552		1,533
22	New York	94	3,623	151	10,805	8	87	1,403	56	32	289,672	118,704	22,528	5,103
23	North Carolina	14	128	12	282			35			4,682		6,820	169
24	Ohio	15	263	16	289	6	32	112		5	34,699		20	717
25	Oregon			6	487			21			6,052			95
26	Pennsylvania	72	1,745	70	2,007	11	243	1,299	181	10	409,096	126,027	56,913	22,144
27	Rhode Island	22	1,821	63	3,305	6	150	572	146	49	177,072	144,271	34,808	6,607
28	Tennessee	28	300	11	241	1	4	80			19,138		800	925
29	Texas							9			1,900			135
30	Utah			10	270			31			7,960			99
31	Vermont	22	1,474	29	1,375			157			51,423			682
32	Virginia	21	233	16	429			60			14,398			212
33	West Virginia	10	119	3	22			42			7,404			153
34	Wisconsin	22	624	17	547			69	1	5	24,806	2,796		258
35	All other states			3	31			6			1,528			34

CLASSES, BY STATES AND TERRITORIES: 1890—Continued.

COST OF MATERIALS USED.													
Total.	Foreign wool in condition purchased.	Domestic wool in condition purchased.	Shoddy.	Waste and wool noils.	Camel's hair and noils.	Mohair and noils.	All other animal hair.	Raw cotton.	Yarns not made in mill.				
									Woolen.	Worsted.	Cotton.	Mohair.	
$203,095,572	$25,775,078	$72,765,406	$6,929,334	$5,417,429	$1,250,367	$848,533	$1,153,997	$8,568,149	$11,285,379	$23,345,646	$17,985,376	$534,169	1
114,890	.....	3,464	6,000	.....	.....	.....	.....	700	.....	.....	95,742	.....	2
28,030	.....	23,325	.....	2,500	.....	.....	.....	50	.....	.....	1,560	.....	3
823,361	50,750	600,110	8,050	6,000	.....	.....	.....	12,536	7,000	18,291	1,782	1,099	4
12,533,174	1,580,778	4,467,523	563,177	216,645	114,593	88,137	14,225	509,892	227,142	2,317,765	569,154	3,251	5
295,605	6,543	139,658	16,546	40,037	.....	.....	.....	4,063	.....	.....	50,400	.....	6
166,696	10,200	57,574	2,250	397	4,458	.....	.....	13,957	.....	.....	69,419	.....	7
1,770,090	18,340	830,640	23,557	6,000	4,000	.....	.....	37,548	156,655	54,610	459,161	.....	8
2,288,710	229,406	1,454,290	51,305	31,310	5,671	.....	.....	173,278	34,730	11,002	70,395	.....	9
507,478	90	451,223	7,650	.....	.....	.....	.....	.....	1,100	400	3,358	.....	10
1,657,010	17,036	768,244	127,716	5,225	.....	.....	.....	197,764	.....	109,688	227,743	.....	11
58,454	.....	100	.....	.....	.....	.....	.....	30,100	.....	.....	24,000	.....	12
5,709,186	444,313	3,461,423	250,864	62,544	25,938	228,386	90,000	245,329	24,389	33,391	205,923	.....	13
512,170	25,000	298,420	4,000	42,000	.....	.....	.....	1,444	34,130	14,600	38,190	.....	14
44,826,084	7,217,287	18,213,516	2,158,839	829,945	548,240	301,149	154,468	1,174,865	437,762	5,192,064	2,422,344	121,356	15
888,431	81,105	495,614	37,058	23,280	.....	.....	.....	29,497	75,989	16,250	15,324	.....	16
397,040	.....	261,724	500	.....	.....	.....	.....	.....	28,000	34,400	8,562	.....	17
598,039	.....	359,239	7,920	.....	.....	.....	.....	110	.....	.....	91,375	.....	18
342,405	840	259,664	1,256	400	.....	.....	.....	13,471	20,250	.....	15,548	.....	19
8,802,056	1,325,964	4,421,399	508,895	150,557	22,960	34	900	292,931	110,069	339,070	559,298	.....	20
6,033,273	468,281	3,007,835	284,327	236,369	.....	456	45,744	226,766	248,872	461,099	341,066	6,000	21
30,428,307	5,413,769	7,892,296	741,588	1,688,000	227,372	3,546	112,340	2,816,867	999,232	1,661,559	2,240,634	35,500	22
265,283	13,005	122,259	8,000	4,672	.....	.....	3,230	27,009	3,600	.....	67,940	.....	23
2,312,977	142,908	1,114,287	34,768	9,281	680	.....	30	7,268	510,896	153,717	137,654	.....	24
327,502	.....	256,374	700	.....	.....	.....	.....	7,484	.....	.....	11,120	.....	25
53,894,040	5,104,106	11,191,122	1,370,042	1,310,650	246,627	173,672	732,363	2,066,020	7,610,113	8,795,198	8,839,675	323,599	26
21,594,707	3,242,965	9,431,759	393,535	461,667	41,728	53,153	697	429,488	332,419	4,034,951	971,033	43,364	27
760,036	38,218	407,407	33,165	8,272	.....	.....	.....	69,465	.....	.....	166,340	.....	28
188,607	.....	162,600	145	.....	.....	.....	.....	10,220	.....	.....	.....	.....	29
189,339	.....	126,240	.....	64	.....	.....	.....	1,540	20,988	3,287	5,112	.....	30
2,084,167	276,738	948,234	196,458	138,392	1,938	.....	.....	94,869	1,500	12,500	146,056	.....	31
463,040	6,308	305,257	30,479	552	240	.....	.....	60,901	30	.....	9,805	.....	32
210,761	1,389	184,901	1,740	141	.....	.....	.....	1,302	213	.....	4,005	.....	33
2,016,384	59,739	1,007,102	58,804	142,529	5,922	.....	.....	11,415	394,829	81,804	78,760	.....	34
98,240	.....	41,483	.....	.....	.....	.....	.....	.....	5,465	.....	36,898	.....	35

TABLE 3.—STATISTICS OF WOOL MANUFACTURE, ALL

	STATES AND TERRITORIES.	COST OF MATERIALS USED—continued.											
		Yarns not made in mill—Continued.				Oil.	Soap.	Chemicals and dye-stuffs.	Fuel.			Rent of power and heat.	All other materials.
		Silk.	Spun silk.	Jute.	Linen.				Total.	Coal.	Wood.		
1	The United States	$1,395,176	$591,226	$1,709,461	$1,621,293	$1,374,049	$1,319,203	$6,453,665	$3,892,456	$3,666,204	$226,252	$279,730	$8,600,450
2	Alabama	.....	.....	.....	.....	353	.....	675	2,148	2,043	105	.....	5,808
3	Arkansas	.....	.....	.....	.....	165	110	50	200	200	.....	50	20
4	California	1,020	6,750	.....	.....	13,405	19,847	28,881	39,761	25,296	14,465	400	7,679
5	Connecticut	144,200	52,970	46,577	49,805	95,934	87,931	470,674	311,712	282,289	29,423	2,455	598,634
6	Delaware	.....	.....	.....	.....	1,144	5,221	9,071	2,410	2,410	.....	.....	20,512
7	Georgia	.....	.....	.....	.....	893	465	1,994	2,394	1,133	1,261	.....	2,695
8	Illinois	36,385	10,200	.....	8,000	9,461	15,863	37,795	29,808	29,758	50	3,820	28,247
9	Indiana	555	.....	.....	.....	14,112	23,361	113,217	45,122	44,612	510	1,030	29,920
10	Iowa	.....	.....	.....	.....	3,881	6,081	21,212	6,472	3,953	2,519	.....	6,011
11	Kentucky	.....	.....	.....	.....	9,715	3,692	68,401	29,433	28,834	599	300	92,053
12	Louisiana	.....	.....	.....	.....	100	.....	550	2,352	2,352	.....	450	802
13	Maine	225	5,565	.....	.....	49,279	55,393	256,228	150,549	103,571	46,978	4,678	114,769
14	Maryland	.....	.....	.....	.....	2,570	1,462	13,733	9,729	9,639	90	.....	26,892
15	Massachusetts	204,377	100,299	203,047	332,949	303,969	294,850	1,701,278	1,059,019	1,033,365	25,654	59,012	1,795,449
16	Michigan	36,925	1,300	.....	.....	6,381	13,608	16,476	21,886	14,636	7,250	1,890	15,848
17	Minnesota	9,016	.....	.....	.....	4,203	5,998	9,464	8,374	6,477	1,897	2,142	24,657
18	Mississippi	.....	.....	.....	.....	2,263	4,277	13,400	13,455	750	12,705	.....	16,000
19	Missouri	.....	.....	.....	.....	4,060	1,877	8,215	8,882	7,812	1,070	944	6,998
20	New Hampshire	23,079	1,660	.....	.....	62,792	74,734	367,358	231,83	194,034	37,349	17,418	290,955
21	New Jersey	6,371	13,430	37,061	6,437	52,092	55,327	234,853	119,769	119,769	.....	3,685	177,433
22	New York	176,788	61,654	854,745	693,635	180,414	229,362	839,987	507,244	504,880	2,364	37,709	3,014,066
23	North Carolina	.....	.....	.....	.....	1,241	1,400	4,950	2,775	875	1,900	100	5,102
24	Ohio	10,380	4,090	300	820	14,543	23,295	62,616	32,652	31,662	990	2,301	50,491
25	Oregon	57	.....	.....	.....	4,550	6,617	27,591	5,759	.....	5,759	250	7,000
26	Pennsylvania	479,623	236,136	567,731	529,647	368,370	247,996	1,346,081	694,977	693,638	1,339	96,745	1,563,547
27	Rhode Island	252,725	94,921	.....	.....	124,165	94,889	626,354	438,352	419,148	19,204	32,394	494,148
28	Tennessee	.....	.....	.....	.....	4,737	1,272	14,823	14,650	12,523	2,127	270	1,417
29	Texas	.....	.....	.....	.....	738	2,060	7,800	3,128	3,125	3	.....	1,916
30	Utah	250	.....	.....	.....	2,296	2,917	8,692	5,423	5,413	10	450	12,080
31	Vermont	4,600	58	.....	.....	17,228	21,252	65,266	44,430	40,020	4,410	3,141	111,507
32	Virginia	.....	.....	.....	.....	5,240	4,426	14,487	5,488	4,703	785	.....	19,827
33	West Virginia	.....	.....	.....	.....	2,267	2,197	7,973	4,505	4,285	220	300	728
34	Wisconsin	8,600	2,193	.....	.....	11,356	11,343	50,865	35,619	30,868	4,751	7,648	47,856
35	All other states	.....	.....	.....	.....	132	80	2,655	1,996	1,531	465	148	9,383

CLASSES, BY STATES AND TERRITORIES: 1890—Continued.

VALUE OF PRODUCTS.														
Total.	All woolen woven goods.	Union or cotton mixed woven goods.	Goods woven on cotton warps, weft partly or wholly of wool or hair.	Upholstery goods and sundries—woolen.	All worsted woven goods.	Goods woven on cotton warps, weft partly or wholly of worsted.	Upholstery goods and sundries—worsted.	Carpets and rugs.	Felt goods.	Wool hats.	Hosiery and knit goods.	Partly manufactured products for sale.	All other products.	
$337,768,524	$55,892,360	$24,304,966	$39,794,997	$193,863	$26,427,833	$23,592,084	$3,440,270	$46,464,417	$3,120,293	$5,229,176	$63,416,497	$39,433,835	$6,457,933	1
207,875	.....	.....	10,800	.....	.....	.....	.....	.....	.....	.....	190,725	6,350	.....	2
38,360	400	2,110	16,000	.....	.....	.....	.....	.....	.....	.....	.....	19,850	.....	3
1,421,903	716,576	601,032	7,425	.....	.....	.....	.....	.....	.....	.....	38,470	.....	58,400	4
20,843,965	3,861,980	3,605,312	1,548,614	65,000	4,425,471	130,250	365,000	2,184,210	257,442	448,375	3,663,661	58,907	199,743	5
482,022	310,062	162,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	9,360	.....	6
340,095	.....	3,673	149,372	.....	.....	.....	.....	.....	.....	.....	166,850	20,160	40	7
3,289,541	1,068,636	500	178,550	.....	.....	.....	.....	.....	.....	.....	1,913,526	113,720	14,609	8
3,863,786	1,738,664	142,066	694,100	.....	.....	3,929	.....	.....	.....	.....	670,564	432,623	181,840	9
700,981	569,792	.....	28,378	.....	.....	.....	.....	.....	.....	.....	7,438	94,548	825	10
2,784,768	24,315	.....	2,084,492	.....	.....	293,750	.....	.....	.....	.....	44,000	319,411	18,800	11
152,455	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	139,660	900	11,895	12
8,814,256	4,468,911	1,335,243	2,030,536	.....	1,350	174,322	345,342	.....	107,239	147,748	76,603	126,962	.....	13
760,339	572,156	200	.....	.....	.....	.....	.....	700	.....	.....	180,823	6,460	.....	14
72,681,408	17,568,523	5,811,961	10,695,826	.....	6,704,964	7,532,367	354,286	7,003,956	842,890	1,700,486	4,725,024	9,289,694	451,431	15
1,689,974	630,626	360	9,465	.....	.....	.....	.....	.....	.....	.....	607,351	184,592	257,380	16
723,738	464,550	.....	.....	.....	.....	.....	.....	.....	.....	.....	181,928	75,445	1,815	17
924,185	4,000	450	864,760	.....	.....	.....	.....	.....	.....	.....	.....	54,075	.....	18
629,902	200,960	99,497	50,835	.....	.....	.....	.....	.....	.....	.....	81,628	196,082	.....	19
14,445,172	3,287,023	1,941,582	2,525,856	.....	225,438	2,403,120	3,090	.....	150,010	.....	3,413,618	412,178	83,257	20
9,984,640	2,104,191	2,178,644	1,089,596	.....	332,699	150,000	215,302	579,522	432,285	.....	1,077,452	1,811,584	13,365	21
53,340,151	3,740,046	1,422,239	1,159,550	40,000	1,834,785	1,026,716	215,276	14,280,442	824,712	1,489,132	23,494,469	1,575,896	2,236,894	22
435,821	58,570	330	146,440	.....	.....	.....	.....	.....	.....	.....	126,625	103,606	250	23
3,915,050	895,664	1,754	240,652	.....	.....	360,000	.....	00	367,100	.....	1,615,640	403,220	23,860	24
614,932	123,938	161,040	310,103	.....	.....	.....	.....	.....	.....	.....	15,267	4,584	.....	25
89,337,419	5,294,021	3,733,950	11,498,213	60,263	2,675,958	4,949,164	1,365,656	22,414,127	138,615	1,443,435	15,742,440	17,355,801	2,665,776	26
34,722,493	5,335,846	1,328,383	2,446,404	28,600	10,227,168	6,489,937	636,324	1,200	.....	.....	2,316,970	5,821,967	89,694	27
1,216,419	46,085	6,063	995,467	.....	.....	.....	.....	.....	.....	.....	.....	168,804	.....	28
359,230	.....	181,000	126,000	.....	.....	.....	.....	.....	.....	.....	.....	52,230	.....	29
392,094	197,260	64,569	33,986	.....	.....	.....	.....	.....	.....	.....	47,960	41,184	7,135	30
3,829,641	648,542	1,199,453	764,876	.....	.....	78,529	.....	.....	.....	.....	1,105,958	30,283	2,000	31
788,809	382,294	66,280	69,065	.....	.....	.....	.....	200	.....	.....	179,000	91,970	.....	32
350,132	200,160	28,780	9,796	.....	.....	.....	.....	.....	.....	.....	21,332	89,904	160	33
3,480,005	1,278,267	136,495	.....	.....	.....	.....	.....	.....	.....	.....	1,478,752	447,727	138,764	34
206,063	98,802	.....	840	.....	.....	.....	.....	.....	.....	.....	93,563	12,858	.....	35

TABLE 4.—SUMMARY OF STATISTICS OF WOOL MANUFACTURE,

	CLASSES.	Number of establishments.	CAPITAL.							
			Value of hired property.	Direct investment.						
				Aggregate.	Value of plant.				Live assets.	
					Total.	Land.	Buildings.	Machinery, tools, and implements.	Total.	Raw materials.
1	Total	2,489	$17,320,780	$296,494,481	$129,721,571	$14,954,323	$40,144,544	$74,622,704	$166,772,910	$45,330,372
2	Woolen mills	1,311	6,859,174	130,989,940	57,820,243	6,534,819	19,332,575	31,952,849	73,169,697	19,494,122
3	Worsted mills	143	4,109,526	68,085,116	27,890,810	2,842,769	7,962,865	17,085,176	40,194,306	10,844,736
4	Carpet mills (other than rag)	173	1,278,150	38,208,842	17,375,384	2,884,139	5,559,458	8,931,787	20,833,458	6,754,041
5	Felt mills	34	128,400	4,460,621	1,865,984	276,780	714,453	874,751	2,594,637	835,694
6	Wool hat mills	32	226,960	4,142,224	1,194,389	144,350	381,105	668,934	2,947,835	900,459
7	Hosiery and knitting mills	796	4,718,570	50,607,738	23,574,761	2,271,466	6,194,088	15,109,207	27,032,977	6,501,320

	CLASSES	POWER.								MACHINERY.		
		Steam.			Water.				Other power.		Combing machines.	
		Number of boilers	Number of engines.	Horse power.	Water wheels.		Turbine wheels.		Number of motors.	Horse power.	Cards. (Sets.)	Foreign.	American.
					Number.	Horse power.	Number.	Horse power.					
8	Total	3,077	1,798	152,009	569	21,678	1,012	63,045	45	672	8,198	674	181
9	Woolen mills	1,547	879	67,192	460	15,249	732	39,783	13	276	5,243	39	9
10	Worsted mills	519	274	36,727	26	2,118	84	10,272	9	216	953	544	129
11	Carpet mills (other than rag)	297	130	20,146	6	295	16	2,236	1	7	392	77	41
12	Felt mills	74	51	3,155	9	417	14	1,479	.....	.....	198	.....	.....
13	Wool hat mills	64	34	2,781	5	280	5	234	.....	.....	229	.....	.....
14	Hosiery and knitting mills	576	430	22,008	63	3,319	161	9,041	22	173	1,183	14	2

	CLASSES.	MACHINERY—Continued.						MATERIALS USED.				
		Looms, on carpets and rugs—Continued.					Knitting machines.	Total cost.	Foreign wool in condition purchased.		Domestic wool in condition purchased.	
		Moquette power looms.	Velvet power looms.	Wilton power looms.	Rug hand looms.	Rug power looms.			Pounds.	Cost.	Pounds.	Cost.
15	Total	462	58	62	1,832	578	36,462	$203,095,572	114,116,612	$25,775,078	258,680,801	$72,765,406
16	Woolen mills	.....	.....	.....	22	.....	103	82,270,335	16,822,138	$4,110,488	168,485,806	$44,749,323
17	Worsted mills	.....	.....	.....	.....	.....	32	50,706,769	37,869,023	10,591,129	59,832,451	17,689,158
18	Carpet mills (other than rag)	462	58	62	1,810	578	.....	28,644,905	54,742,234	9,422,031	2,139,332	433,756
19	Felt mills	.....	.....	.....	.....	.....	.....	2,809,937	1,689,588	448,350	5,039,495	1,393,032
20	Wool hat mills	.....	.....	.....	.....	.....	.....	2,802,041	259,325	75,615	4,278,628	1,373,184
21	Hosiery and knitting mills	.....	.....	.....	.....	.....	36,327	35,861,585	2,734,304	1,127,465	18,905,089	7,126,953

	CLASSES.	MATERIALS USED—continued.									
		Yarns not made in mill.									
		Woolen yarn.		Worsted yarn.		Cotton yarn.		Mohair yarn.		Silk yarn.	
		Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds	Cost.
22	Total	31,385,664	$11,285,379	28,813,717	$23,345,646	83,624,868	$17,985,376	738,777	$534,169	244,306	$1,395,176
23	Woolen mills	4,982,919	3,000,984	2,560,619	2,540,667	23,990,406	5,239,928	324,181	297,995	120,571	632,545
24	Worsted mills	903,174	355,592	11,551,264	11,814,625	9,454,874	2,441,972	232,071	212,364	46,138	344,556
25	Carpet mills (other than rag)	18,763,201	4,112,324	10,555,799	4,711,249	17,920,498	2,712,484	182,400	23,712	.....	.....
26	Felt mills	.....	.....	.....	.....	10,241	2,019	.....	.....	.....	.....
27	Wool hat mills	350,000	24,982	.....	.....	.....	.....	.....	.....	.....	.....
28	Hosiery and knitting mills	6,386,370	3,791,497	4,146,035	4,279,105	32,248,849	7,588,973	125	98	77,597	418,075

a Includes officers, firm members, and clerks. For detailed information see Table 11.

BY CLASSES, FOR THE UNITED STATES: 1890.

CAPITAL—continued.		MISCELLANEOUS EXPENSES.							AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES. (a)		
Direct investment—Continued.											
Live assets—Continued.											
Stock in process and finished products on hand.	Cash, bills and accounts receivable, and all sundries not elsewhere reported.	Total.	Rent paid for tenancy.	Taxes.	Insurance.	Repairs, ordinary, of buildings and machinery.	Interest paid on cash used in the business.	Sundries not elsewhere reported.	Employés.	Wages.	
$64,022,114	$57,420,424	$19,249,508	$1,348,818	$1,174,793	$1,353,049	$3,179,531	$5,841,963	$6,351,354	219,132	$76,660,742	1
29,489,237	24,186,338	8,402,623	541,807	530,236	647,602	1,390,810	2,865,941	2,426,227	79,351	28,478,931	2
15,606,658	13,742,912	4,917,760	296,237	267,713	250,385	808,820	1,595,813	1,698,792	43,593	15,880,183	3
5,705,756	8,373,661	1,819,441	108,997	102,468	125,280	275,555	349,378	791,763	29,121	11,633,116	4
824,370	934,573	232,871	12,648	16,000	29,825	49,686	51,758	72,954	2,266	1,041,296	5
1,029,917	1,017,459	249,568	19,070	13,432	26,703	36,033	79,134	75,196	3,592	1,363,944	6
11,366,176	9,165,481	3,627,245	370,659	178,944	273 254	618,627	899,939	1,286,422	61,209	18,263,272	7

MACHINERY—continued.

Spindles.			Looms on woolen and worsted goods.					Looms on carpets and rugs.							
Woolen.	Worsted.	Cotton.	Broad looms on woolen goods.	Broad looms on worsted goods.	Narrow looms on woolen goods.	Narrow looms on worsted goods.	Hand looms.	Ingrain hand looms.	Ingrain power looms.	Venetian hand looms.	Venetian power looms.	Tapestry brussels power looms.	Body brussels power looms.	Axminster power looms.	
2,329,099	657,324	196,077	20,848	8,482	17,653	11,447	448	638	4,215	158	109	1,498	1,224	95	8
1,742,288	19,750	53,342	19,028	1,037	17,289	1,436	298	7	1	.....	.....	.....	.....	.....	9
207,180	479,675	68,225	1,366	7,445	297	9,936	51	.....	.....	.....	.....	.....	.....	.....	10
53,046	151,132	4,680	194	.....	44	.....	99	631	4,214	157	109	1,498	1,224	95	11
13,829	.....	.....	200	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	12
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13
312,756	6,767	69,830	60	.....	13	75	.....	.....	.....	1	.....	.....	.....	.....	14

MATERIALS USED—continued.

Total foreign and domestic wool in scoured pounds.	Shoddy.		Waste and wool noils.		Camel's hair and noils.		Mohair and noils.		All other animal hair.		Raw cotton.		
	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	
214,945,513	61,561,619	$6,929,334	23,370,056	$5,417,429	7,684,804	$1,250,367	2,136,244	$848,533	16,865,764	$1,153,997	75,428,865	$8,568,149	15
100,226,094	51,862,397	5,398,617	13,608,369	2,353,364	1,781,240	289,970	60,533	15,991	9,619,277	493,492	36,993,712	4,198,527	16
54,989,746	2,608,831	347,006	1,391,444	466,648	4,411.543	672,392	2,038,732	824,869	1,083,690	120,585	3,881,743	438,637	17
35.726,837	598,512	39,295	860,246	146,876	1,001,929	140,175	32,302	5,456	3,645,096	373,823	1,725,761	181,637	18
4,213,230	1,450,384	179,505	1,344,619	262,887	68,250	3,071	.....	.....	2,355,928	48,301	395,032	37,133	19
3,018,114	306,351	85,963	662.092	166.162	11,683	5,610	4,508	2,130	147,600	113,878	.....	.....	20
16,771,492	4,735,144	878.948	5,503,286	2.021,492	410,154	139,149	169	87	14,173	3,918	32,432,617	3,712,215	21

MATERIALS USED—continued.

Yarns not made in mill—Continued.						Oil.		Soap.		Chemicals and dyestuffs.	Fuel.			Rent of power and heat.	All other materials.	
Spun silk yarn.		Jute yarn.		Linen yarn.							Total cost.	Coal.	Wood.			
Pounds	Cost.	Pounds.	Cost.	Pounds.	Cost.	Gallons.	Cost.	Pounds.	Cost.	Cost.		Cost.	Cost.	Cost.	Cost.	
131,529	$591,226	23,795,444	$1,709,461	10,123,816	$1,621,293	4,243,618	$1,374,049	39,290,827	$1,319,203	$6,453,665	$3,892,456	$3,666,204	$226,252	$279,730	$8,600,450	22
69,358	281,211	125,327	13,181	2,529	895	2,439,573	773,839	18,572,964	614,997	3,213,929	1,711,169	1,528,208	182,961	108,669	2,230.554	23
19,427	127,775	.....	.....	100.350	50,473	664,750	258,476	9,486.021	333,288	1,445,965	1,048,245	1,026,320	21,925	62,427	1,060,587	24
.....	.....	23,670,117	1,696,280	9,719,242	1,504,590	546,734	184,891	3,118,925	101,499	978,877	446,501	446,251	250	18.055	1,411,394	25
.....	.....	.....	.....	.....	.....	41,240	14,704	834,205	32,718	122,100	92,551	90,553	1,998	750	172,816	26
.....	.....	.....	.....	.....	.....	22,817	7,102	631,476	23,857	128,741	84.904	84,904	.....	2, 250	707,663	27
42,744	182,240	.....	.....	301,695	65,335	528,504	135,037	6,647,236	212,844	564,053	509,086	489,968	19,118	87,579	3,017,436	28

TABLE 4.—SUMMARY OF STATISTICS OF WOOL MANUFACTURE.

	CLASSES.	PRODUCTS. Aggregate value.	All wool woven goods. Total. Square yards.	Total. Value.	Cloths, doeskins, cassimeres, cheviots, indigo flannels, and broadcloths for men's wear. Square yards.	Cloths, doeskins, cassimeres, cheviots, indigo flannels, and broadcloths for men's wear. Value.	Overcoatings, cloakings, and kerseys for both men's and women's wear. Square yards.	Overcoatings, cloakings, and kerseys for both men's and women's wear. Value.	Carriage cloths of all weights. Square yards.	Carriage cloths of all weights. Value.
1	Total	$337,768,524	101,299,065	$55,892,360	25,637,998	$24,076,808	4,826,767	$5,746,015	1,282,921	$626,791
2	Woolen mills	133,577,977	95,807,636	51,205,385	23,008,903	21,648,649	4,020,612	4,695,723	1,282,921	626,791
3	Worsted mills	79,194,652	4,800,230	4,109,368	2,258,947	2,067,982	806,155	1,050,292		
4	Carpet mills (other than rag)	47,770,193	111,862	80,300						
5	Felt mills	4,654,768	579,337	497,307	370,148	360,177				
6	Wool hat mills	5,329,921								
7	Hosiery and knitting mills	67,241,013								

	CLASSES.	PRODUCTS—continued. Union or cotton mixed woven goods. Total. Square yards.	Total. Value.	Unions, tweeds, cheviots, cassimeres, or other goods for men's wear. Square yards.	Unions, tweeds, cheviots, cassimeres, or other goods for men's wear. Value.	Overcoatings and cloakings. Square yards.	Overcoatings and cloakings. Value.	Sackings, tricots, and dress goods for women's wear. Square yards.	Sackings, tricots, and dress goods for women's wear. Value.	Flannels and linseys. Square yards.	Flannels and linseys. Value.
8	Total	56,322,882	$24,304,966	21,042,283	$12,720,597	4,379,128	$3,141,111	9,892,377	$2,532,598	11,621,679	$3,314,733
9	Woolen mills	54,385,108	23,009,976	20,023,283	12,103,503	3,528,942	2,497,092	9,892,377	2,532,598	11,621,679	3,314,733
10	Worsted mills	1,937,774	1,294,990	1,019,000	617,094	850,186	644,019				
11	Carpet mills (other than rag)										
12	Felt mills										
13	Wool hat mills										
14	Hosiery and knitting mills										

	CLASSES.	PRODUCTS—continued. Goods woven on cotton warps, weft partly or wholly of wool or hair—Continued. Wool-filling dress goods and repellents. Square yards.	Wool-filling dress goods and repellents. Value.	Flannels and shirtings. Square yards.	Flannels and shirtings. Value.	Blankets. Square yards.	Blankets. Value.	Jeans, kerseys, and linseys. Square yards.	Jeans, kerseys, and linseys. Value.	Upholstery goods and sundries—wool. Total value.	Tapestry, terry, rep, and damask. Square yards.	Tapestry, terry, rep, and damask. Value.
15	Total	17,655,803	$4,274,012	16,778,222	$4,795,797	10,929,529	$3,068,666	17,126,217	$4,738,034	$103,863	136,882	$100,263
16	Woolen mills	17,150,803	4,184,262	16,729,685	4,782,829	8,703,822	2,546,338	17,126,217	4,738,034	133,600	35,000	40,000
17	Worsted mills	505,000	89,750	33,390	6,104	2,225,707	522,328					
18	Carpet mills (other than rag)									60,263	101,882	60,263
19	Felt mills			15,147	6,864							
20	Wool hat mills											
21	Hosiery and knitting mills											

	CLASSES.	PRODUCTS—continued. Goods woven on cotton warps, weft partly or wholly of worsted. Total. Square yards.	Total. Value.	Cassimeres, doeskins, coatings, suitings, and other goods for men's wear. Square yards.	Cassimeres, doeskins, coatings, suitings, and other goods for men's wear. Value.	Worsted-filling dress goods, delaines, cashmeres, serges, and other stuffs for women's wear. Square yards.	Worsted-filling dress goods, delaines, cashmeres, serges, and other stuffs for women's wear. Value.	Linings, Italian cloths, and lastings. Square yards.	Linings, Italian cloths, and lastings. Value.
22	Total	78,021,820	$23,592,084	10,878,800	$9,913,126	62,557,940	$12,423,438	4,585,080	$1,255,520
23	Woolen mills	5,268,142	2,000,931	568,597	563,225	3,531,356	990,904	1,168,189	445,902
24	Worsted mills	72,753,678	21,592,053	10,310,203	9,349,901	59,026,584	11,432,534	3,416,891	809,618
25	Carpet mills (other than rag)								
26	Felt mills								
27	Wool hat mills								
28	Hosiery and knitting mills								

BY CLASSES, FOR THE UNITED STATES: 1890—Continued.

PRODUCTS—continued.

All wool woven goods—Continued.

Dress goods, sackings, tricots, ladies' cloth, broadcloth, and other goods for women's wear.		Flannels.		Blankets.		Horse blankets.		Carriage robes.		Woven shawls, wool or worsted.		
Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	
25,237,390	$9,014,477	32,795,600	$10,472,019	5,059,725	$2,694,574	924,049	$516,249	775,963	$646,904	4,758,652	$2,098,523	1
24,608,977	8,769,257	32,762,273	10,458,557	4,666,057	2,532,324	666,625	357,411	257,298	145,019	4,533,970	1,971,654	2
628,413	245,220	17,182	2,662	356,000	141,250	97,548	52,258	411,303	422,835	224,682	126,869	3
						4,500	1,250	107,362	79,050			4
		16,145	10,800	37,668	21,000	155,376	105,330					5
												6
												7

PRODUCTS—continued.

Union or cotton mixed woven goods—Continued.				Goods woven on cotton warps, weft partly or wholly of wool or hair.								
Blankets.		Horse blankets.		Total.		Cassimeres, doeskins, coatings, suitings, and other goods for men's wear.		Overcoatings and cloakings.		Satinets.		
Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	
4,804,390	$1,390,660	4,583,025	$1,205,267	116,586,568	$39,794,997	29,788,143	$14,426,731	5,677,998	$4,195,675	18,630,656	$4,296,082	8
4,804,390	1,390,660	4,514,437	1,171,390	111,027,431	37,199,986	27,882,734	13,273,684	4,814,989	3,387,061	18,619,181	4,287,778	9
		68,588	33,877	5,517,176	2,569,617	1,890,070	1,142,821	863,009	808,614			10
												11
				41,961	25,394	15,339	10,226			11,475	8,304	12
												13
												14

PRODUCTS—continued.

Upholstery goods and sundries—wool—Continued.					All worsted woven goods.								
Braids and braiding.		Picture cord.		Total braids and braiding and picture cord.	Total.		Coatings: serges and suitings for men's wear.		Dress goods, cashmeres, sergee, and other goods for women's wear.		Buntings.		
Running yards.	Value.	Running yards.	Value.	Running yards.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	
60,000	$28,600	50,000,000	$65,000	50,060,000	29,507,286	$26,427,833	17,591,087	$22,386,452	11,349,319	$3,905,398	566,880	$135,983	15
60,000	28,600	50,000,000	65,000	50,060,000	3,048,248	2,626,174	2,030,928	2,245,287	1,017,320	380,887			16
					26,459,038	23,801,659	15,560,159	20,141,165	10,331,999	3,524,511	566,880	135,983	17
													18
													19
													20
													21

PRODUCTS—continued.

Upholstery goods and sundries—worsted.							Total carpets and rugs.	Carpets.						
Total value.	Worsted or mohair goods, tapestry, plush, terry, and rep.		Braids and braiding.		Webbings, gorings, elastic fabrics, bindings, fringes, and other sundries.			Ingrain, 2-ply.		Ingrain, 3-ply.		Ingrain, art.		
	Square yards.	Value.	Running yards.	Value.	Running yards.	Value.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	
$3,440,270	3,994,406	$2,205,618	82,545,251	$993,022	1,254,500	$181,630	$46,464,417	32,921,489	$13,781,984	3,251,368	$1,816,484	553,513	$325,984	22
1,330,332	2,810,158	1,066,972	115,000	106,000	1,092,700	157,360	7,334	2,830	1,290					23
2,019,636	1,096,293	1,108,344	82,430,251	887,022	161,800	24,270								24
90,302	87,955	90,302					46,457,083	32,918,659	13,780,694	3,251,368	1,816,484	553,513	325,984	25
														26
														27
														28

TABLE 4.—SUMMARY OF STATISTICS OF WOOL MANUFACTURE,

	CLASSES.	PRODUCTS—continued.									
		Carpets—Continued.									
		Tapestry brussels.		Body brussels.		Tapestry velvet.		Wilton or wilton velvet.		Axminster.	
		Running yards.	Value.	Running yards.	Value.	Running yards.	Value.	Running yards.	Value.	Running yards.	Value.
1	Total	23,205,844	$14,263,662	6,245,465	$5,319,733	2,482,128	$2,239,166	1,030,101	$1,582,409	379,841	$473,165
2	Woolen mills									500	250
3	Worsted mills										
4	Carpet mills (other than rag)	23,205,844	14,263,662	6,245,465	5,319,733	2,482,128	2,239,166	1,030,101	1,582,409	379,341	472,915
5	Felt mills										
6	Wool hat mills										
7	Hosiery and knitting mills										

	CLASSES.	PRODUCTS—continued.									
		Rugs—Continued.				Felt goods.					
		Smyrna.		Other woolen.		Total.		Cloths.		Trimmings and linings.		Skirts and skirting.	
		Number.	Value.	Number.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.
8	Total	1,430,036	$2,368,000	26,845	$73,817	6,950,001	$3,120,293	2,628,546	$986,888	1,176,114	$90,738	1,800	$1,200
9	Woolen mills	500	1,000			37,619	22,815	20,000	6,000			1,800	1,200
10	Worsted mills					1,009	1,524	1,009	1,524				
11	Carpet mills (other than rag)	1,429,536	2,367,000	26,845	73,817	103,258	67,118						
12	Felt mills					6,808,115	3,028,836	2,607,537	979,364	1,176,114	90,738		
13	Wool hat mills												
14	Hosiery and knitting mills												

	CLASSES.	PRODUCTS—continued.							
		Wool hats.						Hosiery and knit goods.		
		Total.		Wool hats.		All other hats.		Total value.	Woolen half hose.	
		Dozens.	Value.	Dozens.	Value.	Dozens.	Value.		Dozens.	Value.
15	Total	1,046,481	$5,229,176	972,475	$4,612,151	74,006	$617,025	$63,416,497	1,363,062	$2,900,143
16	Woolen mills	100	300	100	300			97,770	2,238	7,321
17	Worsted mills									
18	Carpet mills (other than rag)									
19	Felt mills									
20	Wool hat mills	1,046,381	5,228,876	972,375	4,611,851	74,006	617,025			
21	Hosiery and knitting mills							63,318,727	1,360,824	2,892,822

	CLASSES.	PRODUCTS—continued.							
		Hosiery and knit goods—Continued.							
		All cotton shirts and drawers.		Leggings and gaiters.		Gloves and mittens.		Hoods, scarfs, nubias, etc.	
		Dozens.	Value.	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.
22	Total	3,247,090	$9,032,221	25,072	$85,401	898,081	$1,942,030	342,497	$1,476,430
23	Woolen mills	500	8,000			1,931	6,950		
24	Worsted mills								
25	Carpet mills (other than rag)								
26	Felt mills								
27	Wool hat mills								
28	Hosiery and knitting mills	3,246,590	9,024,221	25,072	85,401	896,150	1,935,080	342,497	1,476,430

BY CLASSES, FOR THE UNITED STATES: 1890—Continued.

PRODUCTS—continued.

Carpets—Continued.								Rugs.						
Moquette.		Smyrna.		Rag.		All other.		Wilton.		Moquette.		Ingrain.		
Running yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	
3,193,186	$3,247,845	127,177	$332,718	77,410	$25,629	1,316,743	$425,857	40,644	$87,702	60,000	$66,000	6,278	$34,262	1
				6,100	2,490	3,925	2,304							2
														3
3,193,186	3,247,845	127,177	332,718	71,310	23,139	1,312,818	423,553	40,644	87,702	60,000	66,000	6,278	34,262	4
														5
														6
														7

PRODUCTS—continued.

Felt goods—Continued.														
Table and piano covers.		For ladies' hats.		Saddle felts.		Rubber shoe linings.		Endless belts.		Druggets.		Hair felting.		
Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	
20,000	$57,400	36,000	$18,000	45,904	$22,952	2,087,557	$576,946	216,982	$1,086,086	185,338	$91,742	551,760	$188,341	8
								15,819	15,615					9
														10
										103,258	67,118			11
20,000	57,400	36,000	18,000	45,904	22,952	2,087,557	576,946	201,163	1,070,471	82,080	24,624	551,760	188,341	12
														13
														14

PRODUCTS—continued.

Hosiery and knit goods—Continued.														
Woolen hose.		Merino or mixed half hose.		Merino or mixed hose.		Cotton half hose.		Cotton hose.		Merino or mixed shirts and drawers.		All woolen shirts and drawers.		
Dozens.	Value.	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.	
2,251,541	$4,744,009	376,253	$605,173	433,083	$791,227	5,341,628	$3,936,536	7,387,409	$6,214,202	2,526,226	$15,055,999	1,092,841	$8,921,777	15
8,997	21,213	200	400					150	150			4,000	40,000	16
														17
														18
														19
														20
2,242,544	4,722,796	376,053	604,773	433,083	791,227	5,341,628	3,936,536	7,387,259	6,214,052	2,526,226	15,055,999	1,088,841	8,881,777	21

PRODUCTS—continued.

Hosiery and knit goods—Continued.										
Cardigan jackets, fancy jackets, etc.		Shawls.		Fancy knit goods, wristers, etc.		Boot and shoe lining.		Jersey cloth.		
Dozens.	Value.	Dozens.	Value.	Dozens.	Value.	Yards.	Value.	Yards.	Value.	
361,478	$3,576,248	22,990	$115,467	270,633	$759,748	7,596,711	$1,088,558	3,072,533	$2,171,328	22
				100	100			7,476	13,636	23
										24
										25
										26
										27
361,478	3,576,248	22,990	115,467	270,533	759,648	7,596,711	1,088,558	3,065,057	2,157,692	28

TABLE 4.—SUMMARY OF STATISTICS OF WOOL MANUFACTURE,

	CLASSES.	PRODUCTS—continued.									
		Partly manufactured products for sale.									
		Total.		Woolen yarn, all wool.		Woolen yarn, union or merino.		Worsted yarn.		Cotton yarn.	
		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1	Total	88,134,330	$39,433,835	35,415,360	$10,742,882	6,799,813	$2,320,088	29,376,182	$22,411,363	3,692,936	$782,849
2	Woolen mills	48,077,114	14,304,804	30,768,571	8,990,106	6,670,757	2,253,792	2,673,546	1,306,927	3,159,047	626,072
3	Worsted mills	36,052,126	23,529,514	3,341,036	1,166,737	71,419	54,271	24,763,501	20,291,046	33,889	6,777
4	Carpet mills (other than rag)	2,616,410	953,127	443,573	104,336	57,637	12,025	1,922,135	799,748	.....	.....
5	Felt mills	10,000	9,000	10,000	9,000	.....	.....	.....	.....	.....	.....
6	Wool hat mills	9,500	1,045	.....	.....	.....	.....	.....	.....	.....	.....
7	Hosiery and knitting mills	1,369,180	636,345	852,180	472,703	.....	.....	17,000	13,642	500,000	150,000

TABLE 5.—WOOLEN MILLS, BY

	STATES AND TERRITORIES.	Number of establishments.	CAPITAL.							
			Value of hired property.	Direct investment.					Live assets.	
				Aggregate.	Value of plant.					
					Total.	Land.	Buildings.	Machinery, tools, and implements.	Total.	Raw materials.
1	The United States	1,311	$6,859,174	$130,989,940	$57,820,243	$6,534,819	$19,332,575	$31,952,849	$73,169,697	$19,494,122
2	Alabama	6	400	18,325	15,250	3,800	1,750	9,700	3,075	1,525
3	Arkansas	6	.....	27,435	21,800	1,750	6,050	14,000	5,635	1,235
4	California	8	81,870	2,618,480	1,540,103	170,300	432,705	937,098	1,078,377	183,310
5	Connecticut	55	252,166	10,188,042	4,614,627	462,050	1,862,474	2,290,103	5,573,415	1,544,877
6	Delaware	3	.....	450,974	257,000	33,500	80,000	143,500	193,974	72,170
7	Georgia	14	.....	298,539	208,440	19,222	94,525	94,693	90,099	20,317
8	Illinois	23	3,000	1,649,918	600,939	68,775	193,864	338,300	1,048,979	261,275
9	Indiana	45	42,725	2,880,114	1,365,795	83,437	336,859	915,499	1,514,319	358,302
10	Iowa	14	13,700	694,600	293,800	31,450	83,350	179,000	400,800	72,900
11	Kentucky	40	87,700	2,560,737	1,211,056	69,935	309,960	831,161	1,349,681	374,747
12	Maine	75	76,400	8,338,864	3,503,276	327,725	1,377,050	1,798,501	4,835,588	1,437,520
13	Maryland	9	.....	372,875	228,600	32,200	75,800	120,600	144,275	46,300
14	Massachusetts	165	2,289,401	34,911,187	13,653,662	1,671,678	5,217,380	6,764,604	21,257,525	5,535,310
15	Michigan	32	85,250	943,598	383,464	23,900	119,531	240,033	560,134	115,327
16	Minnesota	21	6,300	563,771	374,861	143,350	114,175	117,336	188,910	50,657
17	Mississippi	7	.....	1,553,455	876,030	64,650	201,950	609,430	677,425	156,791
18	Missouri	35	11,950	720,616	475,428	68,759	143,808	262,861	245,188	59,893
19	New Hampshire	46	42,500	7,540,233	2,882,643	330,825	938,618	1,613,200	4,657,590	1,658,994
20	New Jersey	21	228,583	3,810,832	1,987,064	355,275	662,625	969,164	1,823,768	632,288
21	New York	91	89,665	7,243,380	4,295,243	443,070	1,400,417	2,451,756	2,948,137	597,797
22	North Carolina	27	.....	339,088	184,530	30,980	44,800	108,750	154,558	36,911
23	Ohio	64	14,650	1,609,574	782,951	78,715	242,589	461,647	826,623	223,051
24	Oregon	6	.....	1,350,585	342,820	54,600	96,306	191,914	1,007,765	185,706
25	Pennsylvania	264	2,164,439	21,671,137	10,266,284	1,123,223	3,020,191	6,122,870	11,404,853	3,191,644
26	Rhode Island	40	1,253,000	9,360,927	3,476,501	288,396	944,200	2,243,905	5,884,426	1,513,534
27	Tennessee	49	2,700	1,393,679	672,013	70,545	180,210	421,258	721,666	191,065
28	Texas	4	.....	371,270	256,130	62,005	44,050	150,075	115,140	28,740
29	Utah	9	22,250	579,209	282,125	31,625	83,500	167,000	297,084	60,784
30	Vermont	29	10,500	3,304,382	1,268,110	158,285	505,625	604,200	2,036,272	474,356
31	Virginia	35	38,000	845,221	421,737	65,319	127,475	228,943	423,484	97,132
32	West Virginia	30	2,800	336,281	167,270	15,295	54,400	97,575	169,011	48,708
33	Wisconsin	32	29,725	2,333,700	850,491	137,080	291,858	421,573	1,483,209	249,496
34	All other states (*b*)	6	3,500	108,912	60,200	13,100	14,500	32,600	48,712	11,460

a Includes officers, firm members, and clerks. For detailed information see Table 12.

BY CLASSES, FOR THE UNITED STATES: 1890—Continued.

PRODUCTS—continued.													
Partly manufactured products for sale—Continued.												All other products.	
Woolen card rolls.		Worsted slubbing and tops.		Worsted noils.		Waste.		Shoddy and mungo.		Wool extract.			
Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Value.	
1,435,215	$704,581	391,501	$106,516	4,466,621	$1,462,050	4,334,436	$691,402	1,586,300	$179,851	635,966	$32,253	$6,457,933	1
1,435,215	704,581	31,400	18,840	45,000	13,000	1,085,178	180,425	1,583,300	179,351	625,100	31,710	1,639,470	2
.....	.....	360,101	87,676	4,337,621	1,433,050	3,130,693	488,914	3,000	500	10,866	543	276,291	3
.....	.....	.....	.....	84,000	16,000	109,065	21,018	.....	.....	.....	.....	62,000	4
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,094,231	5
.....	.....	.....	.....	.....	.....	9,500	1,045	.....	.....	.....	.....	100,000	6
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,285,941	7

STATES AND TERRITORIES: 1890.

CAPITAL—continued.		MISCELLANEOUS EXPENSES.							AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES. (a)		
Direct investment—Continued.											
Live assets—Continued.											
Stock in process and finished products on hand.	Cash, bills and accounts receivable, and all sundries not elsewhere reported.	Total.	Rent paid for tenancy.	Taxes.	Insurance.	Repairs, ordinary, of buildings and machinery.	Interest paid on cash used in the business.	Sundries not elsewhere reported.	Employés.	Wages.	
$29,489,237	$24,186,338	$8,402,623	$541,807	$530,236	$647,602	$1,390,810	$2,865,941	$2,426,227	79,351	$28,478,931	1
600	950	419	24	195	120	80	.....	.....	16	3,125	2
2,000	2,400	752	.....	112	25	225	90	300	31	6,231	3
545,934	349,133	168,324	5,696	8,086	19,657	11,617	102,249	21,019	1,264	287,658	4
2,407,033	1,621,505	614,561	14,059	37,071	45,520	90,140	244,442	183,329	5,173	2,035,462	5
86,156	35,648	27,404	.....	887	2,142	8,251	1,705	14,419	297	103,395	6
47,671	22,111	10,887	.....	1,627	16	3,309	5,132	803	179	32,401	7
379,572	408,132	110,159	240	6,943	10,134	19,312	31,360	42,170	914	313,780	8
643,614	512,403	232,105	2,323	13,940	25,201	50,774	76,135	63,732	2,103	600,062	9
220,850	107,050	40,050	1,100	4,761	3,346	8,398	12,021	10,424	378	133,240	10
400,397	574,537	176,755	8,300	9,979	17,353	31,667	46,472	62,984	1,803	554,544	11
2,474,190	923,878	472,848	5,968	31,675	44,397	83,585	221,907	85,316	4,323	1,629,888	12
81,825	16,150	14,442	.....	2,542	1,392	3,434	3,945	3,129	383	123,931	13
8,421,466	7,300,749	2,618,078	176,810	202,245	161,666	397,922	1,006,373	673,062	19,813	7,586,575	14
155,603	289,204	42,713	4,414	3,527	4,148	6,494	17,500	6,630	518	156,128	15
115,900	22,353	46,211	355	3,404	4,721	8,905	13,281	15,545	341	120,967	16
337,667	182,967	18,054	.....	7,978	5,111	635	2,160	2,170	1,082	306,270	17
114,865	70,430	29,775	666	2,553	4,638	8,118	11,523	2,277	510	122,410	18
1,979,232	1,019,364	483,598	3,235	38,803	32,410	92,725	147,803	168,622	4,189	1,643,168	19
606,121	585,359	405,715	14,974	16,711	19,438	66,629	99,349	188,614	4,228	1,481,315	20
1,025,058	1,325,282	353,245	7,871	15,555	27,514	65,665	60,890	175,750	2,969	1,046,778	21
62,127	55,520	14,758	.....	1,394	976	1,220	915	10,253	324	65,329	22
307,779	295,793	100,326	1,165	8,987	11,824	20,739	31,984	25,627	1,032	294,365	23
383,629	438,430	86,906	.....	2,795	13,877	7,804	33,984	28,446	402	175,313	24
4,229,617	3,983,592	1,356,208	182,228	49,593	108,810	241,588	336,640	437,349	16,061	5,729,982	25
2,554,613	1,816,279	530,535	102,374	20,914	37,498	87,419	190,609	91,721	6,028	2,297,416	26
221,909	308,692	56,263	165	6,953	7,124	12,499	18,719	10,803	998	239,657	27
58,400	28,000	17,333	.....	929	2,104	2,100	4,150	8,050	359	138,795	28
146,438	89,862	27,155	2,550	3,965	4,180	8,275	8,100	85	274	104,156	29
690,274	871,642	178,385	1,040	9,510	11,551	29,045	69,968	57,271	1,585	625,440	30
131,075	195,277	43,972	3,170	2,485	5,513	4,601	18,443	9,760	444	117,023	31
83,285	37,018	15,418	300	1,573	1,529	4,899	5,703	1,414	287	61,919	32
543,485	690,228	104,226	2,440	11,886	13,259	12,116	40,372	24,153	982	324,772	33
30,852	6,400	5,043	340	658	408	620	2,017	1,000	61	17,436	34

b Includes states having less than 3 establishments in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Idaho, 1; Kansas, 1; Louisiana, 1; South Carolina, 1; South Dakota, 2.

TABLE 5.—WOOLEN MILLS, BY STATES

	STATES AND TERRITORIES.	MACHINERY.								
		Cards. (Sets.)	Combing machines.		Spindles.			Looms on woolen and worsted goods.		
			Foreign.	American.	Woolen.	Worsted.	Cotton.	Broad looms on woolen goods.	Broad looms on worsted goods.	Narrow looms on woolen goods.
1	The United States	5,243	39	9	1,742,288	19,750	53,342	19,028	1,037	17,289
2	Alabama	6			160		128			12
3	Arkansas	7			735			3		21
4	California	70			18,598			285		7
5	Connecticut	351			124,478			1,546	120	586
6	Delaware	15			7,306			40		189
7	Georgia	20			3,552					119
8	Illinois	57			18,745			185		138
9	Indiana	127		4	40,690		6,000	218	1	786
10	Iowa	36			10,828			103		55
11	Kentucky	97			36,346			15	1	1,606
12	Maine	361			118,138		7,000	1,736	35	40
13	Maryland	30			8,294		2,856	49		61
14	Massachusetts	1,405			484,228		2,008	6,256	54	2,395
15	Michigan	51			13,559			77		80
16	Minnesota	37			7,510			99		26
17	Mississippi	31			9,196			338		38
18	Missouri	52			12,964		20	74		187
19	New Hampshire	343			111,728	120		1,623	80	251
20	New Jersey	144	5		51,697	4,880		714	241	177
21	New York	271			73,019		3,740	762	37	466
22	North Carolina	35			4,682		6,308	12		139
23	Ohio	96		1	26,417		20	187		269
24	Oregon	21			6,052			84		10
25	Pennsylvania	865	18		325,327	1,730	21,524	2,545	397	7,599
26	Rhode Island	311	16	1	114,782	11,232	2,888	1,120	58	626
27	Tennessee	80			19,138		800	14		792
28	Texas	9			1,900			28		107
29	Utah	31			7,960			56		43
30	Vermont	120			41,839			495		187
31	Virginia	54			12,382			125		85
32	West Virginia	41			7,164			42		111
33	Wisconsin	62		3	21,346	1,788		183	13	62
34	All other states	7			1,528		50	14		19

AND TERRITORIES: 1890—Continued.

MACHINERY—continued.							MATERIALS USED.					
Looms on woolen and worsted goods—Continued.		Looms on carpets and rugs.			Total number of power looms.	Knitting machines.	Total cost.	Foreign wool in condition purchased.		Domestic wool in condition purchased.		
Narrow looms on worsted goods.	Hand looms.	Ingrain hand looms.	Ingrain power looms.	Rug hand looms.				Pounds.	Cost.	Pounds.	Cost.	
1,436	298	7	1	22	38,791	103	$82,270,335	16,822,138	$4,110,488	168,485,806	$44,749,323	1
					12		10,997			10,569	3,464	2
					24		28,030			67,500	23,325	3
					292		788,916	145,000	50,750	3,554,471	600,110	4
42					2,294	10	5,753,095	656,752	218,727	12,379,858	3,273,214	5
					229		295,605	35,369	6,543	495,829	139,658	6
					119		95,999	32,000	10,200	176,992	57,574	7
					323	2	789,310	59,000	18,340	2,507,621	636,665	8
	1				1,005	1	1,850,809	476,633	98,498	5,687,051	1,344,171	9
					158	5	505,503	300	90	1,880,232	451,223	10
	1	2			1,622		1,365,246	57,037	17,036	2,407,292	643,110	11
	1				1,811		4,960,119	1,231,813	369,411	11,530,733	3,320,263	12
	3	1			110		424,855	100,000	25,000	786,200	298,420	13
6					8,711	16	21,815,199	2,105,248	745,930	46,825,715	12,971,031	14
1					158	8	529,515	88,665	22,757	1,622,034	432,226	15
					125		309,378			1,358,290	261,724	16
					376		508,039			1,565,824	359,239	17
					261		311,881	4,000	840	1,048,229	259,664	18
					1,954		4,834,446	526,759	120,548	12,561,277	3,190,903	19
8					1,140		3,281,979	158,639	32,337	7,966,247	1,976,024	20
15	19				1,280		2,930,932	1,288,483	377,302	4,453,263	1,516,792	21
18					169		198,358	50,760	13,005	398,500	122,259	22
	11				456	35	962,270	174,764	36,408	2,365,636	769,675	23
		1			94	6	327,502			1,366,148	256,374	24
907	144	3	1	22	11,449	9	19,198,990	6,446,668	1,022,445	24,438,385	5,865,342	25
434					2,238	9	6,042,754	1,522,915	591,229	11,509,947	3,364,913	26
5	114				811		760,036	187,625	38,218	1,260,861	407,407	27
					135		188,607			572,400	162,600	28
					99		163,864			800,500	126,240	29
					682		1,435,163	1,279,250	233,038	2,660,820	692,225	30
	2				210		375,175	25,367	6,308	950,378	304,507	31
					153		202,801	5,001	1,389	595,822	177,701	32
					258		978,479	164,090	54,139	2,461,482	699,697	33
	2				33	2	46,483			219,700	41,583	34

TABLE 5.—WOOLEN MILLS, BY STATES

	STATES AND TERRITORIES.	MATERIALS USED—continued.						
		Total foreign and domestic wool in scoured pounds.	Sboddy.		Waste and wool noils.		Camel's hair and noils.	
			Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.
1	The United States	100,226,094	51,862,397	$5,398,617	13,608,369	$2,353,364	1,781,240	$289,970
2	Alabama	10,569	20,000	6,000				
3	Arkansas	64,500			5,000	2,500		
4	California	1,588,993	53,111	8,050	30,000	6,000		
5	Connecticut	6,341,262	5,211,440	521,756	431,457	112,120	67,568	15,552
6	Delaware	265,599	95,890	16,546	557,398	40,037		
7	Georgia	147,646	10,000	2,250	2,474	397	19,867	4,458
8	Illinois	1,321,559	67,253	17,577				
9	Indiana	3,478,264	144,303	21,729	48,600	8,040	600	282
10	Iowa	960,916	46,000	7,650				
11	Kentucky	1,542,884	707,940	110,016	21,054	2,105		
12	Maine	6,784,485	1,498,807	247,233	196,486	62,544	35,178	12,618
13	Maryland	372,900	40,000	4,000	150,000	42,000		
14	Massachusetts	25,493,874	20,272,168	1,934,590	4,799,883	664,839	375,868	88,610
15	Michigan	897,016	269,148	31,383	9,300	2,304		
16	Minnesota	781,552	4,000	500				
17	Mississippi	810,562	36,000	7,920				
18	Missouri	644,238	7,000	1,256	4,000	400		
19	New Hampshire	6,693,439	3,174,370	263,333	538,851	107,735	105,000	18,600
20	New Jersey	4,466,131	2,778,040	270,902	731,704	130,653		
21	New York	3,520,270	1,197,099	151,513	216,177	56,669	9,409	3,934
22	North Carolina	371,952	40,000	8,000	45,738	4,672		
23	Ohio	1,848,702	199,680	33,768	38,312	7,281	3,600	680
24	Oregon	673,594	5,000	700				
25	Pennsylvania	17,814,990	12,125,904	1,135,070	5,086,267	875,886	1,109,454	131,704
26	Rhode Island	7,043,711	1,803,842	318,389	340,946	133,995	38,284	7,930
27	Tennessee	1,135,578	197,690	33,165	49,100	8,272		
28	Texas	332,160	1,000	145				
29	Utah	365,500			800	64		
30	Vermont	1,766,642	1,562,221	192,936	50,000	12,000	8,650	1,938
31	Virginia	659,745	88,585	16,229	5,547	402	1,500	240
32	West Virginia	438,250	9,632	1,740	832	141		
33	Wisconsin	1,477,461	196,274	34,271	248,443	72,308	6,262	3,424
34	All other states	111,150						

AND TERRITORIES: 1890—Continued.

MATERIALS USED—continued.

Mohair and noils.		All other animal hair.		Raw cotton.		Yarns not made in mill.						
						Woolen.		Worsted.		Cotton.		
Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Ponnds.	Cost.	
60,533	$15,991	9,619,277	$493,492	36,993,712	$4,198,527	4,982,919	$3,000,984	2,560,619	$2,540,667	23,990,406	$5,239,928	1
				7,500	700							2
				500	50					5,050	1,560	3
				104,782	12,536			161	291	2,536	782	4
198	50	40,803	2,448	1,454,296	218,232	3,880	2,946	293,230	318,917	1,514,150	282,585	5
				62,500	4,063					252,000	50,400	6
				20,815	1,957					67,000	12,150	7
				178,343	23,498			300	270	140,836	19,960	8
				1,845,162	166,162	6,000	3,000	9,000	7,875	116,212	26,228	9
								500	400	10,610	2,758	10
				1,689,664	187,039					1,066,336	215,263	11
640	386			1,756,360	245,329	6,500	3,895	17,766	22,508	552,966	144,557	12
				12,000	1,444					20,050	6,015	13
28,000	4,200	397,678	22,033	5,370,244	686,522	117,564	101,874	775,770	798,912	3,990,832	897,984	14
								30	25	2,440	524	15
												16
				1,000	110					415,000	91,375	17
				128,407	13,471					26,988	6,048	18
56	34	30,000	900	1,626,007	192,721	136,879	39,018	66,381	78,330	1,133,300	243,994	19
				1,341,000	146,814	1,000	400	105,000	150,160	958,600	216,119	20
1,146	355	805,700	38,512	1,281,637	154,564	60,000	48,500	7,967	8,828	1,041,035	197,998	21
		40,374	3,230	258,560	27,009	6,000	3,600			24,300	5,740	22
				71,650	7,268	5,100	2,547	300	210	125,502	25,924	23
				61,536	7,484					45,010	11,120	24
5,956	1,169	8,304,722	426,369	17,256,155	1,801,784	4,459,896	2,652,674	1,012,249	856,708	10,096,883	2,177,771	25
24,537	9,797			1,151,121	153,806	180,000	142,500	261,965	284,733	1,184,149	315,847	26
				693,019	69,465					769,948	166,340	27
				103,000	10,220							28
				14,100	1,540					24,532	4,987	29
				338,677	43,531			10,000	12,500	320,924	80,927	30
				82,172	10,901	100	30			22,940	4,805	31
				12,260	1,302					18,949	3,873	32
				70,245	8,905					41,078	26,244	33
				1,000	100					250	50	34

TABLE 5.—WOOLEN MILLS, BY STATES

	STATES AND TERRITORIES.	MATERIALS USED—continued.							
		Yarns not made in mill—Continued.							
		Mohair.		Silk.		Spun silk.		Jute.	
		Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.
1	The United States	324,181	$297,995	120,571	$632,545	69,358	$281,211	125,327	$13,181
2	Alabama								
3	Arkansas								
4	California	955	1,099						
5	Connecticut	2,445	3,105	13,238	98,141	4,179	16,246	25,000	1,750
6	Delaware								
7	Georgia								
8	Illinois								
9	Indiana			129	555				
10	Iowa								
11	Kentucky								
12	Maine					3,384	5,565		
13	Maryland								
14	Massachusetts	23,000	23,800	16,989	118,221	9,285	62,628	7,207	609
15	Michigan								
16	Minnesota								
17	Mississippi								
18	Missouri								
19	New Hampshire			1,003	8,844	341	1,660		
20	New Jersey			500	4,100	1,109	12,230		
21	New York	35,000	35,500	6,225	44,910	2,268	10,520	500	70
22	North Carolina								
23	Ohio							3,000	300
24	Oregon			10	57				
25	Pennsylvania	237,521	207,043	42,966	248,842	25,568	108,362	89,620	10,452
26	Rhode Island	25,260	27,448	39,111	104,875	23,224	64,000		
27	Tennessee								
28	Texas								
29	Utah								
30	Vermont								
31	Virginia								
32	West Virginia								
33	Wisconsin			400	4,000				
34	All other states								

AND TERRITORIES: 1890—Continued.

MATERIALS USED—continued.											
Yarns not made in mill—Continued.		Oil.		Soap.		Chemicals and dye-stuffs.	Fuel.			Rent of power and heat.	All other materials.	
Linen.							Total cost.	Coal.	Wood.			
Pounds.	Cost.	Gallons.	Cost.	Pounds.	Cost.	Cost.	Cost.	Cost.	Cost.	Cost.	Cost.	
2,529	$895	2,439,573	$773,839	18,572,964	$614,097	$3,213,929	$1,711,169	$1,528,208	$182,961	$108,669	$2,230,554	1
		152	53			675	105		105			2
		560	165	5,300	110	50	200	200		50	20	3
		30,792	13,305	905,306	19,847	28,881	39,586	25,121	14,465		7,679	4
100	25	161,970	53,784	940,640	36,924	242,519	145,010	119,466	25,544	1,550	187,494	5
		18,350	1,144	87,011	5,221	9,071	2,410	2,410			20,512	6
		2,858	804	17,479	415	1,844	1,255		1,255		2,695	7
		21,964	7,174	349,048	11,206	28,417	20,606	20,556	50	360	5,237	8
		37,800	11,308	821,132	19,369	102,920	37,828	37,318	510	100	2,744	9
		11,225	3,881	234,510	6,081	21,202	6,432	3,913	2,519		5,786	10
		37,854	8,702	105,163	2,867	62,852	24,403	23,804	599	300	91,553	11
		139,411	42,941	1,280,993	44,317	221,643	123,910	88,152	35,758	4,598	88,401	12
		6,615	2,535	24,898	937	10,733	8,331	8,241	90		25,440	13
		581,284	204,816	5,168,346	170,237	998,468	504,361	479,662	24,699	26,744	788,790	14
		11,341	4,131	255,551	7,980	11,006	14,207	7,017	7,190	290	2,682	15
		14,508	4,098	222,180	5,689	9,238	7,462	5,577	1,885	1,642	19,025	16
		7,722	2,263	84,700	4,277	13,409	13,455	750	12,705		16,000	17
		14,969	4,060	84,950	1,877	8,215	8,862	7,792	1,070	260	6,928	18
		123,790	42,994	1,483,349	41,478	240,612	103,285	85,529	17,756	3,300	136,157	19
		104,318	35,183	1,075,836	34,568	152,295	69,126	69,126		2,425	48,643	20
500	330	96,839	28,125	680,957	26,077	114,256	57,764	55,861	1,903	2,208	56,205	21
		3,792	1,091	49,500	1,250	4,650	1,900	400	1,500		1,952	22
		32,608	10,599	345,027	8,906	36,143	16,663	15,673	990	525	5,373	23
		14,712	4,550	165,209	6,617	27,591	5,759		5,759	250	7,000	24
1,929	540	722,675	198,558	2,140,597	89,804	547,970	274,421	273,082	1,339	43,814	522,262	25
		123,202	49,425	771,394	30,285	175,572	135,427	121,223	14,204	17,296	115,287	26
		19,594	4,737	44,502	1,272	14,823	14,650	12,523	2,127	270	1,417	27
		2,550	738	101,750	2,069	7,800	3,128	3,125	3		1,916	28
		5,041	2,221	99,150	2,892	8,492	5,048	5,038	10	450	11,930	29
		37,735	13,628	606,256	18,756	58,434	35,223	30,903	4,320	1,210	38,817	30
		18,881	5,120	110,830	2,626	14,487	4,693	3,908	785		4,827	31
		8,451	2,192	76,915	2,107	7,273	4,355	4,135	220		728	32
		25,520	9,382	231,185	8,865	29,692	19,813	16,212	3,601	927	6,812	33
		490	132	3,300	80	2,705	1,491	1,491		100	242	34

TABLE 5.—WOOLEN MILLS, BY STATES

	STATES AND TERRITORIES.	PRODUCTS.								
		Aggregate value.	All wool woven goods.							
			Total.		Cloths, doeskins, cassimeres, cheviots, indigo flannels, and broadcloths for men's wear.		Overcoatings, cloakings, and kerseys for both men's and women's wear.		Carriage cloths of all weights.	
			Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.
1	The United States	$133,577,977	95,807,636	$51,205,385	23,008,903	$21,648,649	4,020,612	$4,695,723	1,282,921	$626,791
2	Alabama	17,150								
3	Arkansas	38,360	700	400						
4	California	1,325,033	1,366,651	716,576	143,102	131,745				
5	Connecticut	9,082,493	6,342,270	3,333,980	1,624,825	1,527,176	499,466	622,011	766,938	255,032
6	Delaware	482,022	327,612	310,662	263,412	263,412				
7	Georgia	173,245								
8	Illinois	1,299,506	1,646,506	1,068,636	999,959	741,248			156,000	129,500
9	Indiana	2,989,182	3,714,040	1,738,664	450,718	368,981	89,170	115,419		
10	Iowa	695,218	1,176,626	569,792	133,770	121,389	1,290	1,290		
11	Kentucky	2,351,117	29,550	24,315	2,600	2,060				
12	Maine	7,521,317	8,219,000	4,061,092	1,664,838	1,022,606	942,275	1,101,946		
13	Maryland	579,516	579,883	572,156	538,175	557,200	600	450		
14	Massachusetts	35,771,161	35,040,073	17,332,989	6,164,897	6,668,386	1,351,659	1,446,019	152,173	106,492
15	Michigan	844,652	881,329	630,626	715.146	550,164	5,000	3,400		
16	Minnesota	539,995	681,490	464,550	7,675	6,150	4,000	3,000		
17	Mississippi	924,185	9,600	4,900	6,000	3,000				
18	Missouri	548,457	556,739	200,960	6,170	4,513	630	750		
19	New Hampshire	8,004,264	8,806,591	3,287,023	1,332,066	834,236			75,519	24,919
20	New Jersey	5,652,166	1,826,871	1,887,390	1,459,695	1,503,267	139,080	171,098	5,984	7,232
21	New York	5,188,020	3,868,113	2,654,228	1,552,702	1,361,563			126,307	103,616
22	North Carolina	308,946	117,550	58,570	60,650	38,300	11,250	3,700		
23	Ohio	1,513,302	1,704,027	863,864	360,805	238,769	27,750	26,000		
24	Oregon	614,932	117,283	123,938	41,809	79,912				
25	Pennsylvania	29,878,010	10,325,818	4,255,656	1,158,019	772,149	438,353	630,514		
26	Rhode Island	9,884,945	3,502,424	4,192,508	3,142,852	3,732,008	321,572	450,000		
27	Tennessee	1,216,419	109,400	46,085	83,650	34,560				
28	Texas	359,230								
29	Utah	338,534	577,536	197,260	23,381	30,818				
30	Vermont	2,723,683	1,379,555	648,542	41,479	44,166	143,892	89,926		
31	Virginia	609,809	477,382	382,294	359,450	318,449	41,625	27,800		
32	West Virginia	328,800	479,876	200,160	104,128	56,377				
33	Wisconsin	1,669,944	1,695,381	1,278,267	565,730	635,645	3,000	2,400		
34	All other states	104,364	247,760	98,802	1,200	400				

AND TERRITORIES: 1890—Continued.

PRODUCTS—continued.												
All wool woven goods—Continued.												
Dress goods, sackings, tricots, ladies' cloth, broadcloth, and all other goods for women's wear.		Flannels.		Blankets.		Horse blankets.		Carriage robes.		Woven shawls, wool or worsted.		
Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	
24,608,977	$8,769,257	32,762,273	$10,458,557	4,666,057	$2,532,324	666,625	$357,411	257,298	$145,019	4,533,970	$1,971,654	1
												2
				700	400							3
		918,105	370,931	305,444	213,900							4
1,644,207	566,949	1,806,834	362,812									5
				64,200	47,250							6
												7
		63,496	26,785	185,851	73,559			684	457	240,516	97,087	8
20,300	9,600	2,686,008	970,098	467,754	274,566							9
		752,656	308,744	288,910	138,369							10
		3,800	1,420	23,150	20,835							11
2,442,244	841,419	2,677,355	807,895	27,055	16,211	165,149	125,560	11,280	4,324	288,804	141,131	12
		35,058	10,906	5,550	3,200	500	400					13
16,379,781	5,607,708	10,548,593	3,244,724	32,515	37,282	1,319	1,364	17,060	10,312	392,070	210,702	14
400	160	101,691	48,367	58,192	28,175	900	360					15
		168,372	62,474	501,443	392,926							16
				3,600	1,900							17
		275,090	70,621	273,949	124,476			900	600			18
2,828,262	958,936	4,240,311	1,302,253	315,119	161,503			15,314	5,176			19
		1,112	403	500	330	90,000	75,000			130,500	130,500	20
1,500	900	1,501,870	910,300	49,500	26,385	300	213	45,000	40,000	590,934	211,251	21
		24,700	6,620	20,950	9,950							22
6,818	3,072	610,016	203,379	413,418	254,479	135,000	63,000	150,000	75,000	220	165	23
		49,056	24,761	21,798	16,492					4,620	2,773	24
837,465	556,713	3,986,916	828,273	1,045,031	441,082	273,457	91,514	17,060	9,150	2,569,517	926,261	25
28,000	7,000	10,000	3,500									26
		11,300	3,850	14,450	7,675							27
												28
		297,411	99,501	244,391	58,714					12,353	8,227	29
420,000	216,800	648,184	246,650	126,000	51,000							30
		25,150	8,760	51,157	27,285							31
		340,218	128,643	35,530	15,140							32
		734,355	308,325	87,860	88,340					304,436	243,557	33
		244,520	97,502	2,040	900							34

TABLE 5.—WOOLEN MILLS, BY STATES

	STATES AND TERRITORIES.	PRODUCTS—continued.							
		Union or cotton mixed woven goods.							
		Total.		Unions, tweeds, cheviots, cassimeres, and other goods for men's wear.		Overcoatings and cloakings.		Sackings, tricots, and dress goods for women's wear.	
		Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.
1	The United States	54,385,108	$23,009,976	20,023,283	$12,103,503	3,528,942	$2,497,092	9,892,377	$2,532,598
2	Alabama								
3	Arkansas	5,850	2,110						
4	California	1,754,649	601,032	74,670	61,583				
5	Connecticut	6,103,276	3,695,312	4,189,326	2,999,552	145,822	166,369	1,373,334	421,501
6	Delaware	1,080,000	162,000	1,080,000	162,000				
7	Georgia	13,774	3,673	13,774	3,673				
8	Illinois	578	500						
9	Indiana	411,048	142,066	1,500	1,700				
10	Iowa								
11	Kentucky								
12	Maine	3,842,467	1,335,243	401,869	266,281	160,425	101,533	2,790,566	800,234
13	Maryland	300	200	300	200				
14	Massachusetts	12,655,898	5,278,427	3,605,066	2,719,290	691,257	599,571	4,833,284	1,097,540
15	Michigan	1,050	360						
16	Minnesota								
17	Mississippi	2,250	450						
18	Missouri	521,174	99,497	520,684	99,302				
19	New Hampshire	5,118,629	1,888,932	860,525	549,798	557,300	438,000	346,083	92,202
20	New Jersey	3,671,300	2,178,644	1,885,600	1,103,397	1,565,700	895,247		
21	New York	3,047,057	1,422,239	401,782	313,506	20,000	18,000	304,625	69,350
22	North Carolina	1,125	330						
23	Ohio	2,700	1,754	700	254				
24	Oregon	483,884	161,040	21,809	29,302				
25	Pennsylvania	11,101,112	3,061,144	3,879,195	1,353,743	186,778	103,600	97,238	20,674
26	Rhode Island	1,353,272	1,292,383	1,353,272	1,292,383				
27	Tennessee	28,265	6,063						
28	Texas	338,000	181,000	240,000	140,000				
29	Utah	171,432	64,569						
30	Vermont	2,072,547	1,199,453	1,120,137	832,431	201,660	174,772	15,750	5,250
31	Virginia	88,410	66,280	83,310	64,220				
32	West Virginia	94,200	28,780	400	240				
33	Wisconsin	420,861	136,495	289,364	110,648			131,497	25,847
34	All other states								

AND TERRITORIES: 1890—Continued.

PRODUCTS—continued.												
Union or cotton mixed woven goods—Continued.						Goods woven on cotton warps, weft partly or wholly of wool or hair.						
Flannels and linseys.		Blankets.		Horse blankets.		Total.		Cassimeres, doeskins, coatings, suitings, and other goods for men's wear.		Overcoatings and cloakings.		
Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	
11,621,679	$3,314,733	4,804,390	$1,390,660	4,514,437	$1,171,390	111,027,431	$37,199,986	27,882,734	$13,273,684	4,814,989	$3,387,061	1
						22,500	10,800					2
3,450	1,150	2,400	960			51,200	16,000					3
1,547,187	448,385	121,030	84,080	11,762	6,984	13,500	7,425					4
300,000	67,500			94,794	40,390	4,654,472	1,548,614	880,717	513,786	95,847	98,581	5
												6
						500,002	149,372					7
		578	500			502,778	178,550	422,159	105,500			8
255,676	78,804	153,872	61,562			2,691,917	694,100	1,665,944	330,994			9
						54,335	28,378	12,000	8,745			10
						6,983,577	2,084,492	1,447,643	529,958			11
38,038	13,089	390,937	132,122	60,632	21,984	5,445,247	1,862,348	1,047,104	577,138	97,555	89,809	12
												13
2,772,570	728,830	669,871	101,596	83,850	31,600	29,852,055	10,330,678	3,909,070	3,091,971	1,663,919	1,529,907	14
1,050	360					20,050	9,465					15
												16
2,250	450					1,672,167	864,760					17
490	195					183,830	50,835					18
2,062,057	510,727			1,292,664	298,205	6,334,944	2,525,856	1,594,726	943,483	623,885	399,800	19
		220,000	180,000			2,107,130	1,089,596	558,300	391,504	959,050	391,422	20
1,729,000	911,550			591,650	109,833	1,056,643	419,361	19,200	10,450	376,405	183,874	21
1,125	330					644,027	146,440	225,927	83,160	312,000	21,060	22
		2,000	1,500			434,005	249,652	1,600	1,100	45	68	23
462,075	131,738					451,995	310,103	135,144	153,743			24
1,441,354	140,564	3,117,462	780,169	2,379,085	662,394	36,406,275	10,248,727	10,618,421	3,990,106	269,410	359,057	25
						4,751,539	2,374,404	3,667,498	1,913,511	416,873	313,483	26
2,225	542	26,040	5,521			3,523,455	995,467	1,141,100	300,650			27
		98,000	41,000			360,000	126,000					28
169,832	63,369	1,600	1,200			86,479	33,986	20,147	3,050			29
735,000	187,000					1,987,060	764,876	488,084	311,455			30
4,500	1,610	600	450			207,205	69,065	24,575	11,520			31
92,800	28,540					27,344	9,796	3,375	1,860			32
												33
						1,700	840					34

TABLE 5.—WOOLEN MILLS, BY STATES

	STATES AND TERRITORIES.	PRODUCTS—continued.							
		Goods woven on cotton warps, weft partly or wholly of wool or hair—Continued.							
		Satinets.		Wool-filling dress goods and repellents.		Flannels and shirtings.		Blankets.	
		Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.
1	The United States	18,619,181	$4,287,778	17,150,803	$4,184,262	16,729,685	$4,782,829	8,703,822	$2,546,338
2	Alabama								
3	Arkansas	1,500	600					1,000	300
4	California							13,500	7,425
5	Connecticut	1,078,760	289,466	1,594,451	428,119	948,834	203,246	55,863	15,416
6	Delaware								
7	Georgia								
8	Illinois	1,500	725			600	300	73,419	70,000
9	Indiana	3,111	2,609			315,909	165,675	8,448	5,748
10	Iowa							9,060	4,758
11	Kentucky							370	200
12	Maine	6,600	3,950	2,687,510	679,281	554,000	133,480	1,052,103	378,190
13	Maryland								
14	Massachusetts	15,996,900	3,538,217	1,729,076	286,748	2,569,569	979,430	3,982,561	903,925
15	Michigan	2,600	1,690			2,100	720	14,350	6,805
16	Minnesota								
17	Mississippi								
18	Missouri	480	440					6,850	1,950
19	New Hampshire	264,000	27,720	1,949,076	559,334	819,577	210,783	1,083,680	384,736
20	New Jersey			148,680	54,500			441,100	252,170
21	New York	300	200			312,538	140,737	278,200	44,100
22	North Carolina	27,850	9,790					19,200	10,000
23	Ohio	8,985	6,368			56,230	19,512	13,000	14,820
24	Oregon							316,851	156,360
25	Pennsylvania	36,385	18,082	8,874,413	2,142,327	10,270,155	2,708,121	1,298,722	276,150
26	Rhode Island	440,872	99,151	166,296	33,259				
27	Tennessee					52,500	30,000	2,850	2,125
28	Texas								
29	Utah					23,635	9,454		
30	Vermont	747,738	287,660			751,238	165,761		
31	Virginia					49,225	14,150	22,215	8,600
32	West Virginia	1,400	980	1,301	694	3,375	1,350	9,180	1,960
33	Wisconsin								
34	All other states	200	130			200	110	1,300	600

AND TERRITORIES: 1890—Continued.

PRODUCTS—continued.									
Goods woven on cotton warps, weft partly or wholly of wool or hair—Continued.		Upholstery goods and sundries—woolen.	All worsted woven goods.						
Jeans, kerseys, and linseys.			Total.		Coatings, serges, and suitings for men's wear.		Dress goods, cassimeres, serges, and other goods for women's wear.		
Square yards.	Value.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	
17,126,217	$4,738,034	$133,600	3,048,248	$2,626,174	2,030,928	$2,245,287	1,017,320	$380,887	1
22,500	10,800								2
48,700	15,100								3
									4
		65,000	254,382	409,973	253,692	409,513	690	460	5
									6
500,002	149,372								7
5,100	2,025								8
698,505	189,074								9
33,275	14,875								10
5,535,564	1,554,334								11
375	500		900	1,350	900	1,350			12
									13
960	480		619,312	795,616	619,312	795,616			14
1,000	250								15
									16
1,672,167	864,760								17
176,500	48,445								18
			146,561	225,438	146,561	225,438			19
			163,050	92,700	57,050	41,500	106,000	51,200	20
70,000	40,000	40,000							21
59,050	22,430								22
354,145	207,784								23
									24
5,038,769	754,884		1,160,630	769,227	900,000	700,000	260,630	69,227	25
60,000	15,000	28,600	703,413	331,870	53,413	71,870	650,000	260,000	26
2,327,005	662,692								27
360,000	126,000								28
42,697	21,482								29
									30
111,190	34,795								31
8,713	2,952								32
									33
									34

TABLE 5.—WOOLEN MILLS, BY STATES

	STATES AND TERRITORIES.	PRODUCTS—continued.							
		Goods woven on cotton warps, weft partly or wholly of worsted.							
		Total.		Cassimeres, doeskins, coatings, suitings, and other goods for men's wear.		Worsted filling dress goods, delaines, cashmeres, serges and other stuffs for women's wear.		Linings, Italian cloths, and lastings.	
		Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.
1	The United States	5,268,142	$2,000,031	568,597	$563,225	3,531,356	$990,904	1,168,189	$445,902
2	Alabama								
3	Arkansas								
4	California								
5	Connecticut	23,000	5,250					23,000	5,250
6	Delaware								
7	Georgia								
8	Illinois								
9	Indiana	14,784	3,929					14,784	3,929
10	Iowa								
11	Kentucky								
12	Maine	395,064	134,322					395,064	134,322
13	Maryland								
14	Massachusetts	1,328,984	753,501	303,537	304,096	330,106	153,804	695,341	295,601
15	Michigan								
16	Minnesota								
17	Mississippi								
18	Missouri								
19	New Hampshire								
20	New Jersey								
21	New York								
22	North Carolina								
23	Ohio								
24	Oregon								
25	Pennsylvania	831,250	258,300	150,000	80,000	641,250	171,500	40,000	6,800
26	Rhode Island	2,617,600	766,200	57,600	100,600	2,560,000	665,600		
27	Tennessee								
28	Texas								
29	Utah								
30	Vermont	57,460	78,529	57,460	78,529				
31	Virginia								
32	West Virginia								
33	Wisconsin								
34	All other states								

AND TERRITORIES: 1890—Continued.

PRODUCTS—continued.									
Upholstery goods and sundries—worsted.	Carpets and rugs.	Felt goods.	Wool hats.	Hosiery and knit goods.	Partly manufactured products for sale.				
					Total.		Woolen yarn, all wool.		
Value.	Value.	Value.	Value.	Value.	Pounds.	Value.	Pounds.	Value.	
$1,330,332	$7,334	$22,815	$300	$97,770	48,077,114	$14,304,804	30,768,571	$8,990,106	1
					17,459	6,350			2
					38,500	19,850	6,000	3,600	3
									4
					137,600	24,364	19,000	10,150	5
					78,000	9,360			6
					39,850	20,160			7
				1,500	89,391	50,220	66,891	38,420	8
				8,425	1,137,055	400,848	376,055	217,398	9
				2,500	140,648	94,548	128,248	88,548	10
					430,892	242,310	240,556	146,613	11
					428,855	126,962	17,950	10,840	12
	700				10,796	6,460	8,796	5,460	13
88,285		6,000		8,000	3,021,933	1,140,797	1,218,415	716,770	14
				12,409	341,332	184,592	240,144	135,244	15
					136,700	75,445	63,150	39,525	16
					99,200	54,075	85,500	47,325	17
				183	350,709	196,982	247,023	146,403	18
3,090					199,200	73,925	100,000	51,840	19
125,000					677,391	278,136	627,391	258,136	20
96,000				50	743,867	371,042	316,290	136,913	21
					254,372	103,606	122,000	66,650	22
	60	1,200		3,082	635,582	392,720	582,805	365,441	23
				15,267	8,816	4,584	216	194	24
911,957	6,374	15,615	300	5,765	36,038,277	8,944,048	24,835,968	5,564,624	25
106,000				40,000	1,627,720	752,980	638,300	471,890	26
					382,611	168,804	146,844	76,557	27
					87,460	52,230	85,300	51,150	28
					66,084	41,184	53,372	37,110	29
					57,366	30,283	13,000	11,250	30
	200				177,490	91,970	128,991	72,100	31
					162,006	89,904	121,906	69,704	32
					453,872	252,307	275,760	148,251	33
				589	6,080	3,758	2,700	2,000	34

TABLE 5.—WOOLEN MILLS, BY STATES

	STATES AND TERRITORIES.	PRODUCTS—continued.							
		Partly manufactured products for sale—Continued.							
		Woolen yarn, union or merino.		Worsted yarn.		Cotton yarn.		Woolen card rolls.	
		Pounds.	Valne.	Pounds.	Value.	Pounds.	Valne.	Ponnds.	Value.
1	The United States	6,670,757	$2,253,792	2,673,546	$1,306,927	3,159,047	$626,072	1,435,215	$704,581
2	Alabama					7,000	1,120	10,459	5,230
3	Arkansas							32,500	16,250
4	California								
5	Connecticut	7,000	1,610						
6	Delaware	78,000	9,360						
7	Georgia							39,750	20,125
8	Illinois	2,000	1,600					20,500	10,200
9	Indiana	35,000	14,000			682,000	150,000	39,000	19,400
10	Iowa							11,800	5,900
11	Kentucky							190,336	95,697
12	Maine			6,500	5,221	178,499	28,628	153,306	76,013
13	Maryland							2,000	1,000
14	Massachusetts	422,961	156,941	166,746	108,385	70,998	20,329		
15	Michigan							99,438	49,223
16	Minnesota							71,550	34,840
17	Mississippi							13,700	6,750
18	Missouri	2,500	1,875					99,186	48,354
19	New Hampshire	3,600	1,440					30,600	14,320
20	New Jersey	50,000	20,000						
21	New York	291,583	183,112					96,459	47,227
22	North Carolina					81,000	13,365	50,372	23,341
23	Ohio							52,777	27,279
24	Oregon							8,600	4,390
25	Pennsylvania	5,712,413	1,830,589	2,163,000	943,321	1,886,630	356,188	89,716	40,649
26	Rhode Island	64,800	32,400	187,300	160,000	181,920	45,480		
27	Tennessee					70,000	10,362	164,817	81,795
28	Texas							2,160	1,080
29	Utah							12,712	4,074
30	Vermont							37,366	18,233
31	Virginia	900	865					35,599	17,805
32	West Virginia							40,100	20,200
33	Wisconsin			150,000	90,000			28,112	14,056
34	All other states					1,000	600	2,300	1,150

a Includes items as follows: cottonades, $249,839; cotton batts, $1,575; cotton cassimeres, doeskins, $267,176; cotton cloths, $36,000; cotton dusters. $35,000; cotton jeans, kerseys, etc., $27,298; cotton lap dusters, $80,000; cotton piece goods, $254,120; cotton shirtings, $238,085; custom work, $52,445; dyeing, $1,586; flannel shirts,

AND TERRITORIES: 1890—Continued.

PRODUCTS—continued.									
Partly manufactured products for sale—Continued.								All other products. (a)	
Worsted slubbing and noils.		Waste.		Shoddy and mungo.		Wool extract.			
Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Value.	
76,400	$31,840	1,085,178	$180,425	1,583,300	$179,351	625,100	$31,710	$1,639,470	1
									2
									3
									4
				111,600	12,604				5
									6
		100	35					40	7
								100	8
		5,000	50					1,150	9
		500	50			100	50		10
									11
		72,600	6,260						12
									13
		442,813	61,372	700,000	77,000			36,868	14
		1,750	125					7,200	15
						2,000	1,080		16
									17
		1,500	150			500	200		18
				65,000	6,325				19
								200	20
		39,535	3,790					185,100	21
		1,000	250						22
								970	23
									24
		463,350	101,375	679,200	80,262	208,000	27,040	1,400,897	25
76,400	31,840	44,000	5,570	20,500	2,460	414,500	3,340		26
		950	90						27
									28
								1,535	29
		7,000	800					2,000	30
		5,000	500	7,000	700				31
								160	32
								2,875	33
		80	8					375	34

10,000; fly nets, $27,200; ginghams, $53,750; listings, $2,000; pickings, $69,250; scouring wool, $32,500; stockinets, $450; woolen batts, $3,482; woolen silk yarn, 175,000; miscellaneous, $22,714.

TABLE 6.—WORSTED MILLS,

	STATES.	Number of establishments.	CAPITAL.								
			Value of hired property.	Direct investment.							
				Aggregate.	Value of plant.				Live assets.			
					Total.	Land.	Buildings.	Machinery, tools, and implements.	Total.	Raw materials.	Stock in process and finished products on hand.	Cash, bills and accounts receivable, and all sundries not elsewhere reported.
1	The United States	143	$4,109,526	$68,085,116	$27,890,810	$2,842,769	$7,962,865	$17,085,176	$40,194,306	$10,844,736	$15,606,658	$13,742,912
2	Connecticut	10	.....	5,263,201	1,905,153	239,666	570,400	1,095,087	3,358,048	583,981	975,544	1,798,523
3	Massachusetts	33	800,100	21,204,909	8,728,179	1,007,575	2,775,173	4,945,431	12,476,730	3,204,626	5,371,979	3,900,125
4	New Hampshire	4	.....	4,295,688	1,125,440	69,000	197,000	859,440	3,170,248	603,278	1,252,304	1,314,666
5	New Jersey	6	75,000	1,305,271	653,472	38,500	181,500	433,472	651,799	210,661	174,375	266,763
6	New York	16	245,000	5,615,875	2,085,099	247,509	485,968	1,351,622	3,530,776	980,056	1,675,819	874,901
7	Pennsylvania	41	1,794,700	13,929,489	5,432,681	522,500	1,290,684	3,619,497	8,496,808	2,393,752	2,881,667	3,221,389
8	Rhode Island	28	1,161,726	14,949,166	7,240,767	657,519	2,273,205	4,310,045	7,708,399	2,677,811	2,959,159	2,071,429
	All other states (b)	5	33,000	1,521,517	720,019	60,500	188,937	470,582	801,498	190,571	315,811	295,116

	STATES.	MACHINERY—continued.									MATERIALS USED.		
		Spindles.			Power looms.						Total cost.	Foreign wool in condition purchased.	
		Woolen.	Worsted.	Cotton.	Total number of power looms.	Broad looms on woolen goods.	Broad looms on worsted goods.	Narrow looms on woolen goods.	Narrow looms on worsted goods.	Hand looms.	Knitting machines.		Pounds.	Cost.
10	The United States	207,180	479,675	68,225	19,044	1,366	7,445	297	9,936	51	32	$50,706,769	37,869,023	$10,591,129
11	Connecticut	29,100	8,932	.....	827	51	676	.....	100	.....	.....	2,814,186	877,903	354,389
12	Massachusetts	38,262	151,558	14,690	6,488	301	1,633	.....	4,554	.....	.....	14,259,116	16,197,664	4,123,616
13	New Hampshire	2,416	21,184	.....	2,074	12	38	.....	2,024	.....	.....	2,080,295	4,191,453	1,109,490
14	New Jersey	.....	17,648	.....	81	50	20	.....	11	.....	.....	1,417,167	465,481	182,674
15	New York	23,827	40,552	.....	1,512	194	605	5	708	28	6	3,470,580	1,298,049	440,894
16	Pennsylvania	51,035	104,169	31,615	3,271	498	1,294	291	1,188	23	26	11,539,880	6,632,146	1,604,230
17	Rhode Island	58,080	131,424	21,920	4,369	160	3,037	1	1,171	.....	.....	13,932,912	7,406,327	2,600,836
18	All other states	4,460	4,208	.....	422	100	142	.....	180	.....	.....	1,192,633	800,000	175,000

	STATES.	MATERIALS USED—continued.									
		Yarns not made in mill.									
		Woolen.		Worsted.		Cotton.		Mohair.		Silk.	
		Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.
19	The United States	903,174	$355,592	11,551,264	$11,814,625	9,454,874	$2,441,972	232,071	$212,364	46,138	$344,556
20	Connecticut	.....	.....	1,550,697	1,735,603	328,500	70,500	126	146	4,285	44,346
21	Massachusetts	19,078	15,060	2,711,220	2,935,931	2,578,066	833,947	71,990	97,556	2,218	18,480
22	New Hampshire	.....	.....	151,200	138,080	1,398,758	280,634	.....	.....	.....	.....
23	New Jersey	97,480	63,362	219,230	254,999	20,000	4,000	40,000	6,000	1,514	2,271
24	New York	.....	.....	683,885	647,760	720,645	196,265	.....	.....	9,048	64,709
25	Pennsylvania	376,116	144,020	2,871,376	2,683,644	3,462,091	800,421	114,345	92,746	11,846	71,900
26	Rhode Island	410,500	133,150	3,275,906	3,308,920	419,014	136,650	5,610	15,916	17,227	142,850
27	All other states	.....	.....	87,750	109,688	527,200	119,555	.....	.....	.....	.....

a Includes officers, firm members, and clerks. For detailed information see Table 12.

BY STATES: 1890.

MISCELLANEOUS EXPENSES.							AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES. (a)		MACHINERY			
Total.	Rent paid for tenancy.	Taxes.	Insurance.	Repairs, ordinary, of buildings and machinery.	Interest paid on cash used in the business.	Sundries not elsewhere reported.	Employés.	Wages.	Cards. (Sets.)	Combing machines.		
										Foreign.	American.	
$4,917,760	$296,237	$267,713	$250,385	$808,820	$1,595,813	$1,698,792	43,593	$15,880,183	953	544	129	1
405,369	.....	16,784	26,252	22,480	149,280	191,573	2,261	875,372	96	7	.....	2
1,491,042	78,506	121,349	66,612	334,243	454,924	435,408	12,021	4,556,997	238	177	45	3
129,869	.....	22,575	13,943	1,000	72,031	20,320	1,963	678,552	29	25	4	4
91,406	4,900	2,195	4,869	8,850	38,761	31,831	954	284,102	21	21	2	5
342,073	15,830	20,751	13,457	61,355	162,738	67,942	3,953	1,481,194	96	36	14	6
975,930	127,141	23,763	57,678	180,664	181,063	405,621	9,453	3,350,113	207	141	9	7
1,337,472	67,860	57,833	58,461	175,818	517,819	461,681	11,757	4,263,968	247	128	48	8
144,599	2,000	3,463	11,113	24,410	19,197	84,416	1,231	389,885	19	9	7	9

MATERIALS USED—continued.

Domestic wool in condition purchased.		Total foreign and domestic wool in scoured pounds.	Shoddy.		Waste and wool noils.		Camel's hair and noils.		Mohair and noils.		All other animal hair.		Raw cotton.		
Pounds.	Cost.		Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	
59,832,451	$17,689,158	54,989,746	2,608,831	$347,006	1,391,444	$466,648	4,411,543	$672,392	2,038,732	$824,869	1,083,690	$120,585	3,881,743	$438,637	10
492,211	222,151	796,054	69,000	10,860	6,096	3,054	147	66	220,000	88,000	.....	.....	6,000	1,150	11
13,981,862	4,092,690	15,860,091	398,288	74,743	132,763	28,082	3,321,439	456,559	703,506	294,819	2,113	898	869,053	96,998	12
1,080,527	275,333	3,020,166	163,600	20,788	.....	.....	15,000	2,700	.....	.....	.....	.....	150,400	18,044	13
2,655,886	821,883	1,704,433	100,000	5,000	15,000	5,000	.....	.....	.....	.....	.....	.....	50,000	6,500	14
5,283,237	1,684,526	4,107,493	9,497	1,788	128,841	24,502	565,000	116,250	6,763	3,191	.....	.....	.....	.....	15
15,639,877	4,606,687	14,434,400	1,425,785	149,697	446,227	123,898	266,865	49,699	399,153	167,503	468,616	28,990	1,367,085	144,262	16
19,534,803	5,793,241	13,821,280	364,661	72,430	652,767	278,992	132,092	33,798	109,310	43,356	12,961	697	1,341,705	160,958	17
1,164,048	292,647	1,245,829	78,000	11,700	9,750	3,120	111,000	13,320	600,000	228,000	600,000	90,000	97,500	10,725	18

MATERIALS USED—continued.

Yarns not made in mill—Continued.				Oil.		Soap.		Chemicals and dyestuffs.	Fuel.			Rent of power and heat.	All other materials.	
Spun silk.		Linen.							Total cost.	Coal.	Wood.			
Pounds.	Cost.	Pounds.	Cost.	Gallons.	Cost.	Pounds.	Cost.	Cost.		Cost.	Cost.	Cost.	Cost.	
19,427	$127,775	100,350	$50,473	664,750	$258,476	9,486,021	$333,288	$1,445,965	$1,048,245	$1,026,320	$21,925	$62,427	$1,060,587	19
74	857	.....	.....	26,363	14,124	542,719	20,214	116,923	63,513	61,390	2,123	.....	68,290	20
3,269	26,386	.....	.....	154,015	62,694	2,998,509	99,689	394,551	338,540	338,133	407	24,214	243,663	21
.....	.....	.....	.....	11,435	4,679	911,969	20,482	58,650	88,219	84,944	3,275	7,965	55,231	22
.....	.....	.....	.....	20,779	8,489	152,167	6,711	13,140	18,905	18,905	.....	600	17,633	23
100	400	100,350	50,473	29,478	12,082	684,058	38,958	177,287	62,249	62,249	.....	2,648	46,598	24
14,687	90,181	.....	.....	205,983	79,949	1,938,891	68,055	209,937	165,491	165,491	.....	14,380	244,190	25
1,297	9,951	.....	.....	193,717	69,371	1,501,478	58,772	417,155	279,412	274,412	5,000	12,620	363,837	26
.....	.....	.....	.....	22,980	7,088	756,230	20,407	58,322	31,916	20,796	11,120	.....	21,145	27

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Kentucky, 2; Maine, 1; Ohio, 1; Wisconsin, 1.

TABLE 6.—WORSTED MILLS,

	STATES.	PRODUCTS.											
		Aggregate value.	All worsted woven goods.								Goods woven on cotton warps, weft partly or wholly of worsted.	
			Total.		Coatings, serges, and suitings for men's wear.		Dress goods, cassimeres, serges, and other goods for women's wear.		Buntings.		Total.	
			Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.
1	The United States	$79,194,652	26,459,038	$23,801,659	15,560,159	$20,141,165	10,331,999	$3,524,511	566,880	$135,983	72,753,678	$21,592,053
2	Connecticut	4,651,402	2,660,351	4,015,498	2,660,351	4,015,498					139,500	125,000
3	Massachusetts	21,933,775	7,176,803	5,909,348	3,616,852	4,654,837	2,993,071	1,118,528	566,880	135,983	34,755,183	6,778,866
4	New Hampshire	2,764,976									13,772,125	2,403,120
5	New Jersey	2,058,662	171,428	239,999	171,428	239,999					225,000	150,000
6	New York	5,763,102	1,722,896	1,834,785	1,722,896	1,834,785					2,691,179	1,026,716
7	Pennsylvania	17,861,776	2,105,712	1,906,731	1,391,334	1,575,950	714,378	330,781			8,327,386	4,690,864
8	Rhode Island	22,319,684	12,621,848	9,895,298	5,997,298	7,820,096	6,624,550	2,075,202			10,624,880	5,723,737
9	All other states	1,841,275									2,218,425	693,750

	STATES.	PRODUCTS—continued.											
		All wool woven goods—Continued.											
		Cloths, doeskins, cassimeres, cheviots, indigo flannels, and broadcloths for men's wear.		Overcoatings, cloakings, and kerseys for both men's and women's wear.		Dress goods, sackings, tricots, ladies' cloth, broadcloth, and other goods for women's wear.		Flannels.		Blankets.		Horse blankets.		Carriage robes.	
		Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.
10	The United States	2,258,947	$2,067,982	806,155	$1,050,292	628,413	$245,220	17,182	$2,662	356,000	$141,250	97,548	$52,258	411,303	$422,835
11	Connecticut			92,500	178,000										
12	Massachusetts	181,088	208,062	5,650	5,651	607	349	13,000	780					147,589	20,692
13	New Hampshire														
14	New Jersey			113,334	136,001										
15	New York	815,589	747,219	98,732	148,241	7,266	3,336								
16	Pennsylvania	406,820	259,694	276,423	325,296	620,540	241,535	4,182	1,882	356,000	141,250	97,548	52,258		
17	Rhode Island	855,450	853,007	219,516	257,103									4,454	4,501
18	All other states													259,260	397,642

	STATES.	PRODUCTS—continued.											
		Goods woven on cotton warps, weft partly or wholly of wool or hair—Continued.								Felt cloth.		Partly manufactured products for sale.	
		Overcoatings and cloakings.		Wool-filling dress goods and repellents.		Flannels and shirtings.		Blankets.				Total.	
		Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Pounds.	Value.
19	The United States	863,009	$808,614	505,000	$89,750	33,390	$6,104	2,225,707	$522,328	1,009	$1,524	36,052,126	$23,529,514
20	Connecticut									1,009	1,524	209,030	24,851
21	Massachusetts	306,348	296,426									13,827,404	7,803,844
22	New Hampshire											918,412	309,206
23	New Jersey											1,791,933	1,532,662
24	New York											1,582,981	846,880
25	Pennsylvania	508,661	440,188	505,000	89,750	33,390	6,104	1,587,360	369,308			10,956,323	7,841,563
26	Rhode Island	48,000	72,000									6,368,258	4,918,987
27	All other states							638,347	153,020			397,785	251,521

a Includes items as follows: custom work, $3,514; fire hose, $225,000; oil press cloth, $41,500; scouring wool, $4,292; shorts, $806; sweepings, burs, and springs, $1,179.

BY STATES: 1890—Continued.

PRODUCTS—continued.

Goods woven on cotton warps, weft partly or wholly of worsted—Continued.						Upholstery goods and sundries—worsted.						All wool woven goods.		
Cassimeres, doeskins, coatings, suitings, and other goods for men's wear.		Worsted filling, dress goods, delaines, cassimeres, serges, and other stuffs for women's wear.		Linings, Italian cloths, and lastings.		Total value.	Worsted or mohair goods, tapestry, plush, terry, and rep.		Braids and braiding.		Webbings, gorings, elastic fabrics, bindings, fringes, and other sundries.		Total.		
Square yards.	Value.	Square yards.	Value.	Square yards.	Value.		Square yards.	Value.	Running yards.	Value.	Running yards.	Value.	Square yards.	Value.	
10,310,203	$9,349,901	59,026,584	$11,432,534	3,416,801	$809,618	$2,019,636	1,096,293	$1,108,344	82,430,251	$887,022	161,800	$24,270	4,800,230	$4,109,368	1
139,500	125,000	.....	.....	.....	.....	305,000	300,000	395,000	.....	.....	.....	.....	92,500	178,000	2
273,663	307,605	31,654,829	5,764,143	2,826,691	767,118	266,001	.....	.....	20,085,888	266,001	.....	.....	347,934	235,534	3
393,600	256,160	13,378,525	2,146,960	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4
.....	.....	225,000	150,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	113,334	136,001	5
100,530	150,794	2,590,649	875,922	.....	.....	119,270	.....	.....	4,937,240	95,000	161,800	24,270	1,043,267	980,488	6
5,773,016	3,876,323	2,054,370	752,041	600,000	62,500	453,699	522,267	338,327	16,725,373	115,372	.....	.....	1,777,013	1,038,365	7
3,373,669	4,340,269	7,251,211	1,383,468	.....	.....	530,324	60,693	119,675	40,681,750	410,649	.....	.....	1,166,922	1,143,338	8
256,225	293,750	1,872,000	360,006	90,200	40,000	345,342	213,333	345,342	.....	.....	.....	.....	259,260	397,612	9

PRODUCTS—continued.

All wool woven goods—Continued.		Union or cotton mixed woven goods.								Goods woven on cotton warps, weft partly or wholly of wool or hair.				
Shawls.		Total.		Unions, tweeds, cheviots, cassimeres, and other goods for men's wear.		Overcoatings and cloakings.		Horse blankets.		Total.		Cassimeres, doeskins, coatings, suitings, and other goods, for men's wear.		
Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	
224,682	$126,869	1,937,774	$1,294,990	1,019,000	$617,094	850,186	$644,019	68,588	$33,877	5,517,176	$2,569,617	1,890,070	$1,142,821	10
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11
.....	.....	934,908	533,534	928,800	528,444	6,108	5,090	.....	.....	364,493	365,148	58,145	68,722	12
.....	.....	70,200	52,650	70,200	52,650	.....	.....	.....	.....	.....	.....	.....	.....	13
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14
121,680	81,692	.....	.....	.....	.....	.....	.....	.....	.....	1,136,855	729,963	1,136,855	729,963	15
15,500	16,450	912,666	672,806	.....	.....	844,078	638,929	68,588	33,877	3,329,481	1,249,486	695,076	344,136	16
87,502	28,727	20,000	36,000	20,000	36,000	.....	.....	.....	.....	48,000	72,000	.....	.....	17
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	638,347	153,020	.....	.....	18

PRODUCTS—continued.

Partly manufactured products for sale—Continued.														All other products. (a)	
Woolen yarn, wool or merino.		Worsted yarn.		Cotton yarn.		Worsted slubbing and tops.		Worsted noils.		Waste.		Shoddy and wool extract.			
Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Value.	
3,412,455	$1,221,008	24,763,501	$20,291,046	33,889	$6,777	360,101	$87,676	4,337,621	$1,433,050	3,130,693	$488,914	13,866	$1,043	$276,291	19
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	209,030	24,851	.....	.....	1,529	20
743,845	286,795	9,776,455	6,712,844	.....	.....	298,427	44,764	1,649,880	486,460	1,358,797	272,981	.....	.....	41,500	21
253,156	58,492	665,256	250,714	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22
.....	.....	1,354,837	1,377,707	.....	.....	625	468	296,290	125,807	140,181	28,680	.....	.....	.....	23
.....	.....	1,026,000	681,495	.....	.....	50,000	32,500	367,214	117,109	139,767	15,776	.....	.....	225,000	24
2,355,454	839,721	7,402,656	6,624,255	.....	.....	11,049	9,944	926,538	316,267	246,760	50,333	13,866	1,043	8,262	25
60,000	36,000	4,140,512	4,392,510	33,889	6,777	.....	.....	1,097,699	387,407	1,036,158	96,293	.....	.....	.....	26
.....	.....	397,785	251,521	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	27

TABLE 7.—CARPET MILLS (OTHER

	STATES.	Number of establishments.	CAPITAL.								
			Value of hired property.	Direct investment.							
				Aggregate.	Value of plant.				Live assets.			
					Total.	Land.	Buildings.	Machinery, tools, and implements.	Total.	Raw materials.	Stock in process and finished products on hand.	Cash, bills and accounts receivable, and all sundries not elsewhere reported.
1	The United States	173	$1,278,150	$38,208,842	$17,375,384	$2,884,139	$5,559,458	$8,931,787	$20,833,458	$6,754,041	$5,705,756	$8,373,661
2	Massachusetts	7	.....	8,676,924	3,589,730	596,000	1,283,100	1,710,630	5,087,194	1,960,845	1,038,603	2,087,746
3	New Jersey	6	2,700	724,393	293,921	54,100	119,404	120,417	430,472	57,253	116,665	256,554
4	New York	15	70,000	12,178,342	5,239,437	1,210,500	1,653,917	2,375,020	5,938,905	2,385,565	1,838,873	1,714,467
5	Pennsylvania	142	1,205,200	15,129,619	7,466,300	978,539	2,180,776	4,306,985	7,663,319	1,624,680	2,230,986	3,807,653
6	All other states (b)	3	250	2,499,564	785,996	45,000	322,261	418,735	1,713,568	725,698	480,629	507,241

	STATES.	MACHINERY—continued.								
		Spindles.			Total number of power looms.	Looms on carpets and rugs.				
		Woolen.	Worsted.	Cotton.		Total number of looms on carpets and rugs.	Ingrain hand looms.	Ingrain power looms.	Venetian hand looms.	Venetian power looms.
7	The United States	53,046	151,132	4,680	8,538	10,898	631	4,214	157	109
8	Massachusetts	8,078	39,256	1,872	1,150	1,150	.....	311	.....	.....
9	New Jersey	1,820	1,024	.....	207	282	.....	12	.....	.....
10	New York	18,126	78,152	2,808	1,912	2,077	.....	357	.....	.....
11	Pennsylvania	20,242	18,976	.....	4,821	6,936	627	3,235	157	109
12	All other states	4,780	13,724	.....	448	453	4	299	.....	.....

	STATES.	MATERIALS USED.							
		Total cost.	Foreign wool in condition purchased.		Domestic wool in condition purchased.		Total foreign and domestic wool in scoured pounds.	Shoddy.	
			Pounds.	Cost.	Pounds.	Cost.		Pounds.	Cost.
13	The United States	$28,644,905	54,742,234	$9,422,031	2,139,332	$433,756	35,726,837	598,512	$39,295
14	Massachusetts	4,731,873	16,470,121	2,244,474	40,085	7,514	8,579,919	.....	.....
15	New Jersey	430,917	703,927	173,056	.....	.....	547,035	.....	.....
16	New York	8,689,413	17,939,285	3,898,321	1,500,000	300,000	13,687,763	6,735	808
17	Pennsylvania	13,548,371	14,581,759	2,428,166	447,694	92,912	9,902,903	591,777	38,487
18	All other states	1,244,331	5,047,142	678,014	151,553	33,330	3,009,217	.....	.....

	STATES.	MATERIALS USED—continued.							
		Yarns not made in mill—Continued.							
		Worated.		Cotton.		Mohair.		Jute.	
		Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.
19	The United States	10,555,799	$4,711,249	17,920,408	$2,712,484	182,400	$23,712	23,670,117	$1,696,280
20	Massachusetts	2,316,087	1,142,740	1,474,455	240,731	.....	.....	2,485,603	202,438
21	New Jersey	38,542	16,018	114,082	20,324	.....	.....	496,337	37,061
22	New York	626,567	259,106	3,742,190	584,101	.....	.....	12,486,875	854,675
23	Pennsylvania	7,488,205	3,233,823	12,035,674	1,781,245	182,400	23,712	7,782,879	557,279
24	All other states	86,398	59,562	554,097	86,083	.....	.....	418,423	44,827

a Includes officers, firm members, and clerks. For detailed information see Table 12.

THAN RAG), BY STATES: 1890.

MISCELLANEOUS EXPENSES.							AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES. (a)		MACHINERY.			
Total.	Rent paid for tenancy.	Taxes.	Insurance.	Repairs, ordinary, of buildings and machinery.	Interest paid on cash used in the business.	Sundries not elsewhere reported.	Employés.	Wages.	Cards. (Sets.)	Combing machines.		
										Foreign.	American.	
$1,819,441	$108,997	$168,468	$125,280	$275,555	$349,378	$791,766	29,121	$11,633,116	392	77	41	1
367,164	.....	69,166	26,175	107,752	96,658	67,413	5,144	1,892,072	40	20	23	2
30,502	182	2,889	3,669	18,456	1,447	3,859	585	212,554	22	.....	1	3
399,322	5,400	35,944	29,886	37,498	93,012	197,582	8,954	3,345,165	201	18	16	4
820,434	103,390	38,293	60,802	81,652	156,564	379,733	12,674	5,509,805	104	19	1	5
202,019	25	22,176	4,748	30,197	1,697	143,176	1,764	673,520	25	20	.....	6

MACHINERY—continued.

Looms on carpets and rugs—Continued.								Looms on woolen goods.			
Tapestry brussels power looms.	Body brussels power looms.	Axminster power looms.	Moquette power looms.	Velvet power looms.	Wilton power looms.	Rug hard looms.	Rug power looms.	Broad looms.	Narrow looms.	Hand looms.	
1,498	1,224	95	462	58	62	1,810	578	194	44	99	7
215	539	72	.....	.....	.....	.....	13	.....	.....	.....	8
26	4	.....	.....	40	1	105	94	30	.....	.....	9
943	107	17	400	18	2	219	14	54	.....	.....	10
314	487	6	.....	.....	59	1,485	457	110	44	99	11
.....	87	.....	62	.....	.....	1	.....	.....	.....	.....	12

MATERIALS USED—continued.

Waste and wool noils.		Camel's hair and noils.		Mohair and noils.		All other animal hair.		Raw cotton.		Yarns not made in mill.		
										Woolen.		
Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	
860,246	$146,876	1,001,929	$140,175	32,302	$5,456	3,645,096	$373,823	1,725,761	$181,637	18,763,201	$4,112,324	13
24,897	2,654	.....	.....	.....	.....	.....	.....	765,634	76,033	103,933	41,573	14
.....	.....	.....	.....	2,302	456	487,808	42,806	.....	.....	395,000	82,675	15
251,465	48,243	156,457	24,781	.....	.....	529,556	71,966	960,127	105,604	1,212,621	256,794	16
583,884	95,979	486,951	57,779	30,000	5,000	2,542,447	247,354	.....	.....	16,838,127	3,622,736	17
.....	.....	358,521	57,615	.....	.....	85,285	11,697	.....	.....	213,520	108,546	18

MATERIALS USED—continued.

Yarns not made in mill—Continued.		Oil.		Soap.		Chemicals and dyestuffs.	Fuel.			Rent of power and heat.	All other materials.	
Linen.							Total cost.	Coal.	Wood.			
Pounds.	Cost.	Gallons.	Cost.	Pounds.	Cost.	Cost.		Cost.	Cost.	Cost.	Cost.	
9,719,242	$1,504,590	546,734	$184,891	3,118,925	$101,499	$978,877	$446,501	$446,251	$250	$18,055	$1,411,394	19
2,100,439	332,389	102,928	29,591	169,280	4,724	159,357	112,067	112,067	.....	.....	135,588	20
39,088	6,437	8,702	3,690	63,578	2,114	18,579	7,417	7,417	.....	.....	20,284	21
4,424,263	640,792	183,755	61,862	926,899	31,008	342,304	140,917	140,667	25	.....	1,068,131	22
2,845,865	475,192	208,738	75,118	1,548,104	54,683	407,701	145,919	145,919	.....	18,055	187,231	23
309,587	49,780	42,611	14,630	411,064	8,970	50,936	40,181	40,181	.....	.....	160	24

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Connecticut, 2; Rhode Island, 1.

TABLE 7.—CARPET MILLS (OTHER

	STATES.	PRODUCTS.							
		Aggregate value.	Total carpets and rugs.	Carpets.					
				Ingrain, 2-ply.		Ingrain 3-ply.		Ingrain, art.	
			Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.
1	The United States	$47,770,193	$46,457,083	32,918,659	$13,780,694	3,251,368	$1,816,484	553,513	$325,984
2	Massachusetts	7,275,009	7,003,956	1,795,300	901,161	308,081	202,286		
3	New Jersey	817,242	579,522	219,000	120,505				
4	New York	14,606,116	14,280,442	2,317,322	1,093,896	519,230	266,263	21,000	11,025
5	Pennsylvania	22,886,416	22,407,753	27,533,220	11,011,721	2,120,486	1,137,742	532,513	314,959
6	All other states	2,185,410	2,185,410	1,053,817	653,411	303,571	210,193		

	STATES.	PRODUCTS—continued.							
		Carpets—Continued.							
		Moquette.		Smyrna.		Rag.		All other.	
		Running yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.
7	The United States	3,193,186	$3,247,845	127,177	$332,718	71,310	$23,139	1,312,818	$423,553
8	Massachusetts								
9	New Jersey								
10	New York	2,800,000	2,800,000	15,381	34,186				
11	Pennsylvania	30,000	30,000	111,796	298,532	71,310	23,139	1,312,818	423,553
12	All other states	363,186	417,845						

	STATES.	PRODUCTS—continued.									
		All wool woven goods.						Woolen and worsted upholstery goods.		Felt druggets.	
		Total.		Horse blankets.		Carriage robes.					
		Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.
13	The United States	111,862	$80,300	4,500	$1,250	107,362	$79,050	189,837	$150,565	103,258	$67,118
14	Massachusetts										
15	New Jersey	111,862	80,300	4,500	1,250	107,362	79,050	87,955	90,302	103,258	67,118
16	New York										
17	Pennsylvania							101,882	60,263		
18	All other states										

a Includes items as follows: custom work, $60,000; coverlets, $2,000.

THAN RAG), BY STATES: 1890—Continued.

PRODUCTS—continued.

Carpets—Continued.

Tapestry brussels.		Body brussels.		Tapestry velvet.		Wilton or wilton velvet.		Axminster.		
Running yards.	Value.	Running yards.	Value.	Running yards.	Value.	Running yards.	Value.	Running yards.	Value.	
23,265,844	$14,263,662	6,245,465	$5,319,733	2,482,128	$2,239,166	1,630,101	$1,582,409	379,341	$472,915	1
5,657,283	4,281,816	180,060	162,000	62,430	89,500	577,333	892,768	349,174	434,723	2
35,948	14,549	.....	.....	194,662	183,977	13,218	12,142	.....	.....	3
14,046,304	8,024,238	845,092	728,956	896,996	795,023	65,735	102,678	30,167	38,192	4
3,466,309	1,943,059	4,397,208	3,648,993	1,328,040	1,170,666	294,475	451,844	.....	.....	5
.....	.....	823,165	779,784	.....	.....	79,340	122,977	.....	.....	6

PRODUCTS—continued.

Rugs.

Wilton.		Moquette.		Ingrain.		Smyrna.		All other woolen.		
Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	
40,644	$87,702	60,060	$66,000	6,278	$34,262	1,429,536	$2,367,000	26,845	$73,817	7
10,644	39,702	.....	.....	.....	.....	.....	.....	.....	.....	8
.....	.....	.....	.....	.....	.....	169,985	248,349	.....	.....	9
.....	.....	60,000	66,000	.....	.....	121,024	287,559	4,651	32,426	10
30,000	48,000	.....	.....	6,278	34,262	1,138,527	1,831,092	21,794	40,191	11
.....	.....	.....	.....	.....	.....	.....	.....	400	1,200	12

PRODUCTS—continued.

Partly manufactured products for sale.												All other products. (a)	
Total.		Woolen yarn, all wool.		Woolen yarn, union or merino.		Worsted yarn.		Worsted noils.		Waste.			
Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Value.	
2,616,410	$953,127	443,573	$104,336	57,637	$12,025	1,922,135	$790,748	84,000	$16,000	109,065	$21,018	$62,006	13
704,728	271,053	.....	.....	57,637	12,025	538,691	238,028	84,000	16,000	25,000	5,000	.....	14
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15
1,023,682	325,674	421,573	94,336	.....	.....	534,044	221,720	.....	.....	68,065	9,618	.....	16
888,000	356,400	22,000	10,000	.....	.....	850,000	340,000	.....	.....	16,000	6,400	62,000	17
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18

TABLE 8.—FELT MILLS,

	STATES.	Number of establishments.	CAPITAL.								
			Value of hired property.	Direct investment.							
				Aggregate.	Value of plant.				Live assets.			
					Total.	Land.	Buildings.	Machinery, tools, and implements.	Total.	Raw materials.	Stock in process and finished products on hand.	Cash, bills and accounts receivable, and all sundries not elsewhere reported.
1	The United States	34	$128,400	$4,460,621	$1,865,984	$276,780	$714,453	$874,751	$2,594,637	$835,694	$824,370	$934,573
2	Massachusetts	7	9,000	731,976	303,073	62,660	142,625	97,788	428,903	79,025	71,284	278,594
3	New York	11	85,000	1,371,219	561,187	89,500	236,386	235,301	810,032	303,646	256,038	250,348
4	Ohio	4	1,600	520,298	248,432	25,320	71,642	151,470	271,866	38,000	105,382	128,484
5	Pennsylvania	3	7,800	242,207	120,500	5,500	41,000	74,000	121,707	28,050	62,229	31,428
6	All other states (b)	9	25,000	1,594,921	632,792	93,800	222,800	316,192	962,129	386,973	329,437	245,719

	STATES.	MATERIALS USED.											
		Total cost.	Foreign wool in condition purchased.		Domestic wool in condition purchased.		Total foreign and domestic wool in scoured pounds.	Shoddy.		Waste and wool noils.		Camel's hair and noils.	
			Pounds.	Cost.	Pounds.	Cost.		Pounds.	Cost.	Pounds.	Cost.	Pounds	Cost.
7	The United States	$2,809,937	1,689,588	$448,350	5,039,495	$1,393,032	4,213,230	1,450,384	$179,505	1,344,619	$262,887	68,250	$3,071
8	Massachusetts	637,928	121,335	39,006	1,091,953	260,326	564,604	765,482	87,914	496,170	110,423	68,250	3,071
9	New York	807,276	716,229	235,253	1,128,919	365,124	1,452,092	375,947	57,350	245,578	44,802	.....	.....
10	Ohio	209,497	.....	.....	559,844	192,112	393,744	.....	.....	.....	.....	.....	.....
11	Pennsylvania	138,736	97,000	15,520	115,000	60,000	147,750	.....	.....	.....	.....	.....	.....
12	All other states	1,016,500	755,024	158,571	2,143,779	515,470	1,655,040	308,955	34,241	602,871	107,662	.....	.....

	STATES.	PRODUCTS.									
		Aggregate value.	Felt goods.								
			Total.		Cloths.		Trimmings and linings.		Table and piano covers.		
			Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	
13	The United States	$4,654,768	6,808,115	$3,028,836	2,607,537	$979,364	1,176,114	$90,738	20,000	$57,400	
14	Massachusetts	918,890	3,587,529	836,890	1,351,010	239,314	395,114	79,023	.....	.....	
15	New York	1,517,199	320,480	824,712	293,980	293,980	.....	.....	.....	.....	
16	Ohio	406,700	81,800	365,900	.....	.....	.....	.....	.....	.....	
17	Pennsylvania	322,800	374,499	123,000	.....	.....	.....	.....	.....	.....	
18	All other states	1,489,179	2,443,807	878,334	962,547	446,070	781,000	11,715	20,000	57,400	

	STATES.	PRODUCTS—continued.							
		Felt goods—Continued.	All wool woven goods.						
		Hair felting.	Total.		Cloths, doeskins, cassimeres, cheviots, indigo flannels, and broadcloths for men's wear.		Flannels.		
		Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.
19	The United States	551,760	$188,341	579,337	$497,307	370,148	$360,177	16,145	$10,800
20	Massachusetts	177,261	65,341	.....	.....	.....	.....	.....	.....
21	New York	.....	.....	155,376	105,330	.....	.....	.....	.....
22	Ohio	.....	.....	53,813	31,800	.....	.....	16,145	10,800
23	Pennsylvania	374,499	123,000	.....	.....	.....	.....	.....	.....
24	All other states	.....	.....	370,148	360,177	370,148	360,177	.....	.....

a Includes officers, firm members, and clerks. For detailed information, see Table 12.

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Connecticut, 2; Indiana, 1; Maine, 1; Michigan, 1; New Hampshire, 2; New Jersey, 2.

BY STATES: 1890.

MISCELLANEOUS EXPENSES.							AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES. (a)		MACHINERY.				
Total.	Rent paid for tenancy.	Taxes.	Insurance.	Repairs, ordinary, of buildings and machinery.	Interest paid on cash used in the business.	Sundries not elsewhere reported.	Employés.	Wages.	Cards. (Sets.)	Spindles. Woolen.	Looms. Broad looms on woolen goods.	Looms. Narrow looms on woolen goods.	
$232,871	$12,648	$16,000	$29,825	$49,686	$51,758	$72,954	2,266	$1,041,296	198	13,829	200	10	
29,386	768	5,883	4,278	5,820	3,293	9,344	340	140,528	52	.....	.....	.....	1
86,273	8,860	2,496	11,012	9,000	32,148	22,757	820	361,944	63	4,623	53	2	2
28,191	90	2,972	2,444	1,200	6,577	14,908	183	92,161	8	2,826	43	2	3
10,780	780	185	2,560	1,050	2,400	3,805	176	111,682	6	.....	.....	.....	4
78,241	2,150	4,464	9,531	32,616	7,340	22,140	747	334,981	69	6,380	104	6	5

MATERIALS USED—continued.

All other animal hair.		Raw cotton,		Cotton yarn.		Oil.		Soap.		Chemicals and dyestuffs.	Fuel.			Rent of power and heat.	All other materials.	
Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Gallons.	Cost.	Pounds.	Cost.	Cost.	Total cost.	Coal. Cost.	Wood. Cost.	Cost.	Cost	
2,355,928	$48,301	395,032	$37,133	10,241	$2,019	41,240	$14,704	834,205	$32,718	$122,100	$92,551	$90,553	$1,998	$750	$172,816	7
1,722,028	17,659	110,800	9,892	1,500	315	3,876	1,638	168,742	5,984	31,309	21,668	21,470	198	.....	48,723	8
600	962	29,700	2,673	6,405	1,153	9,989	4,265	187,788	8,062	13,249	31,904	31,904	.....	.....	42,479	9
300	30	.....	.....	.....	.....	6,700	2,004	100,000	2,817	4,194	4,820	4,820	.....	.....	3,520	10
633,000	29,650	.....	.....	.....	.....	10,000	3,000	65,000	2,600	5,800	5,166	5,166	.....	.....	17,000	11
.....	.....	254,532	24,568	2,336	551	10,675	3,797	312,675	13,255	67,548	28,993	27,193	1,800	750	61,094	12

PRODUCTS—continued.

Felt goods—Continued.

For ladies' hats.		Saddle felts.		Rubber shoe linings.		Endless belts.		Druggets.		
Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	
36,000	$18,000	45,904	$22,952	2,087,557	$576,946	201,163	$1,070,471	82,080	$24,624	13
36,000	18,000	.....	.....	1,628,144	435,212	.....	.....	.....	.....	14
.....	.....	.....	.....	.....	.....	26,500	530,732	.....	.....	15
.....	.....	1,800	900	.....	.....	80,000	365,000	.....	.....	16
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17
.....	.....	44,104	22,052	459,413	141,734	94,663	174,739	82,080	24,624	18

PRODUCTS—continued.

All wool woven goods—Continued.				Goods woven on cotton warps, weft partly or wholly of wool or hair.		Partly manufactured products for sale.		All other products. (c)	
Blankets.		Horse blankets.				Woolen yarn.			
Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Pounds.	Value.	Value.	
37,668	$21,000	155,376	$105,330	41,961	$25,394	10,000	$9,000	$1,094,231	19
.....	.....	.....	.....	.....	.....	.....	.....	82,000	20
.....	.....	155,376	105,330	15,339	10,226	.....	.....	576,931	21
37,668	21,000	.....	.....	.....	.....	10,000	9,000	.....	22
.....	.....	.....	.....	.....	.....	.....	.....	199,800	23
.....	.....	.....	.....	26,622	15,168	.....	.....	235,500	24

c Includes items as follows: felt boots, $427,433; felt shoes, $366,087; piano felts, $22,000; piano goods, $151,443; piano hammers, $44,227. polishing felt, $83,041.

TABLE 9.—WOOL HAT

	STATES.	Number of establishments.	CAPITAL.								
			Value of hired property.	Direct investment.							
				Aggregate.	Value of plant.				Live assets.			
					Total.	Land.	Buildings.	Machinery, tools, and implements.	Total.	Raw materials.	Stock in process and finished products on hand.	Cash, bills and accounts receivable, and all sundries not elsewhere reported.
1	The United States	32	$226,960	$4,142,224	$1,194,389	$144,350	$381,105	$668,934	$2,947,835	$900,459	$1,029,917	$1,017,459
2	Massachusetts	7	50,000	1,043,590	324,439	21,000	104,705	198,734	719,151	211,602	336,742	170,807
3	New York	5	50,000	1,444,767	520,000	67,000	158,000	295,000	924,767	282,323	215,061	427,383
4	Pennsylvania	17	57,500	1,048,804	261,450	41,350	73,400	146,700	787,354	303,969	324,817	158,568
5	All other states (b)	3	69,460	605,063	88,500	15,000	45,000	28,500	516,563	102,565	153,297	260,701

	STATES.	MATERIALS USED.							
		Total cost.	Foreign wool in condition purchased.		Domestic wool in condition purchased.		Total foreign and domestic wool in scoured pounds.	Shoddy.	
			Pounds.	Cost.	Pounds.	Cost.		Pounds.	Cost.
6	The United States	$2,802,041	259,325	$75,615	4,278,628	$1,373,184	3,018,114	306,351	$85,963
7	Massachusetts	829,263	35,662	21,989	887,734	289,513	590,045	172,433	50,518
8	New York	860,937	103,953	23,278	1,594,551	447,722	1,064,516	28,203	7,750
9	Pennsylvania	747,700	119,710	30,348	868,980	411,187	868,690	89,487	24,064
10	All other states	364,141	.....	.....	927,363	224,762	494,863	16,228	3,631

	STATES.	MATERIALS USED—continued.							
		Oil.		Soap.		Chemicals and dyestuffs.	Fuel—coal.	Rent of power and heat.	All other materials.
		Gallons.	Cost.	Pounds.	Cost.	Cost.	Cost.	Cost.	Cost.
11	The United States	22,817	$7,102	631,476	$23,857	$128,741	$84,904	$2,250	$767,663
12	Massachusetts	3,710	1,074	157,100	5,773	39,062	23,674	2,250	239,065
13	New York	5,040	1,725	139,258	7,250	31,831	22,543	.....	287,502
14	Pennsylvania	3,243	847	249,764	7,918	45,776	26,604	.....	75,875
15	All other states	10,824	3,456	85,354	2,916	12,072	12,083	.....	105,221

a Includes officers, firm members, and clerks. For detailed information see Table 12.

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Connecticut, 2; Maine, 1.

MILLS, BY STATES: 1890.

MISCELLANEOUS EXPENSES.							AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES. (a)		MACHINERY.	
Total.	Rent paid for tenancy.	Taxes.	Insurance.	Repairs, ordinary, of buildings and machinery.	Interest paid on cash used in the business.	Sundries not elsewhere reported.	Employés.	Wages.	Cards. (Sets.)	
$249,568	$19,070	$13,432	$26,703	$36,033	$79,134	$75,196	3,592	$1,363,944	229	1
79,247	3,350	4,576	9,212	14,418	17,451	30,240	1,045	482,602	50	2
54,233	5,500	3,558	7,696	4,999	20,180	12,300	997	361,512	71	3
58,490	4,210	2,211	6,748	11,093	20,494	13,134	1,049	330,050	72	4
57,598	6,010	3,087	3,047	4,923	21,009	19,522	501	189,780	36	5

MATERIALS USED—continued.

Waste and wool noils.		Camel's hair and noils.		Mohair and noils.		All other animal hair.		Yarns not made in mill.		
								Woolen.		
Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	
662,092	$166,162	11,688	$5,610	4,508	$2,130	147,600	$113,878	350,000	$24,982	6
29,810	15,355			4,508	2,130	147,600	113,878	350,000	24,982	7
79,921	31,336									8
552,361	119,471	11,688	5,610							9
										10

PRODUCTS.

Aggregate value.	Hats.						Partly manufactured products for sale.		All other products. (c)	
	Total.		Wool hats.		All other hats.		Waste.			
	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.	Pounds.	Value.	Value.	
$5,329,921	1,046,381	$5,228,876	972,375	$4,611,851	74,006	$617,025	9,500	$1,045	100,000	11
1,700,486	257,867	1,700,486	186,180	1,088,226	71,687	612,260				12
1,489,132	275,847	1,489,132	275,847	1,489,132						13
1,444,180	386,738	1,443,135	384,419	1,438,370	2,319	4,765	9,500	1,045		14
696,123	125,929	596,123	125,929	596,123					100,000	15

c Scotch caps, 25,000 dozen, $100,000.

TABLE 10.—HOSIERY AND KNITTING

	STATES AND TERRITORIES.	Number of establishments.	CAPITAL.									MACHINERY—continued.						MATERIALS USED.		
			Value of hired property.	Direct investment.								Spindles.			Looms.			Knitting machines.	Total cost.	Foreign wool in condition purchased.	
				Aggregate.	Value of plant.				Live assets.						On woolen and worsted goods.		On carpets.				
					Total.	Land.	Buildings.	Machinery tools, and implements.	Total.	Raw materials.	Stock in process and finished products on hand.	Woolen.	Worsted.	Cotton.	Broad looms on woolen.	Narrow looms on woolen.	Narrow looms on worsted.	Venetian hand looms.			Pounds.	Cost.
1	The United States	796	$4,718,570	$50,607,738	$23,574,761	$2,271,466	$6,194,088	$15,109,207	$27,032,977	$6,501,320	$11,366,176	$9,165,481	312,756	6,767	69,830	60	13	75	1	36,327	$35,861,585	2,734,304	$1,127,465
2	Alabama	3		94,373	61,223	3,300	20,000	37,923	33,150	200	16,250	16,700								128	103,893		
3	Connecticut	27	348,708	4,822,911	1,755,452	125,200	626,735	1,003,517	3,067,459	464,668	1,478,351	1,124,440	36,068	4,000	5,000					1,195	2,029,921	532,344	288,277
4	Georgia	4		121,494	97,500	17,000	48,000	32,500	23,994	3,240	13,185	7,569	960							225	70,697		
5	Illinois	35	334,000	1,254,576	502,133	26,730	78,200	397,203	752,443	273,729	187,828	290,886	5,824							1,525	986,780		
6	Indiana	9	15,000	716,989	305,209	38,000	76,446	190,763	411,780	153,127	148,205	110,448	7,392							670	408,195	568,758	105,908
7	Iowa	3	4,300	8,950	8,000	600	5,800	1,600	950	450	400	100								14	1,975		
8	Louisiana	3	10,500	106,600	77,000	2,000	8,000	67,000	29,600	5,000	10,100	14,500			1,800					169	58,202		
9	Maine	4	3,000	28,095	7,425	100	2,500	4,825	20,670	4,170	1,275	15,225								91	33,839		
10	Maryland	8	8,600	149,656	56,499	4,950	13,855	37,694	93,157	16,443	22,340	54,374								218	87,315		
11	Massachusetts	74	266,500	4,497,940	1,779,119	147,730	474,782	1,156,607	2,718,821	540,784	1,386,169	791,868	11,058		29,764	5				3,344	2,552,705	52,989	42,272
12	Michigan	10	32,150	560,917	270,983	37,203	82,700	151,080	289,934	53,769	131,256	104,909	3,680							678	285,057	25,000	6,250
13	Minnesota	3	50,000	247,498	62,750	20,100	15,150	27,500	184,748	26,793	108,839	49,116								152	87,662		
14	Missouri	7	34,100	33,247	9,507			9,507	23,740	9,080	8,372	6,288								145	30,524		
15	New Hampshire	37	182,400	2,706,065	1,209,423	126,075	291,078	792,270	1,496,642	306,571	891,359	298,712	33,526		3,000					3,032	1,777,595	243,850	66,726
16	New Jersey	15	15,700	1,352,143	806,454	75,094	227,283	504,077	545,689	81,337	345,743	118,609	9,548							694	582,783	188,839	74,214
17	New York	201	1,683,957	19,608,331	9,859,889	865,177	2,398,628	6,596,084	9,748,442	2,850,014	3,882,491	3,015,937	170,077		15,980		3	75		5,434	13,669,169	882,065	438,721
18	North Carolina	5	6,200	72,900	42,800	2,500	17,000	23,300	30,100	2,300	15,100	12,700			512					136	66,025		
19	Ohio	44	176,560	1,071,007	383,510	81,950	91,400	210,160	687,497	193,725	256,372	237,400	2,456			1	4			1,574	914,085	4,000	1,500
20	Pennsylvania	236	1,076,220	9,121,632	4,539,524	519,137	1,245,087	2,775,300	4,582,108	923,503	1,627,082	2,031,523	12,492	1,152	3,774	42			1	14,492	8,720,363	10,459	3,397
21	Rhode Island	16	137,500	1,728,618	942,958	90,200	257,402	595,356	785,660	236,571	325,142	223,946	4,210	1,615	10,000					755	1,618,621	140,000	50,900
22	Utah	5	6,000	33,370	14,920	720	2,100	12,100	18,450	3,910	7,540	7,000								73	25,475		
23	Vermont	10	157,000	754,882	204,556	9,400	31,000	164,156	550,326	109,692	176,094	264,540	9,584							221	649,004	66,000	43,700
24	Wisconsin	23	135,100	1,214,727	424,719	66,500	120,140	238,079	790,008	183,123	265,032	341,853	2,800							1,138	899,371	20,000	5,600
25	All other states (b)	14	35,075	300,817	153,208	11,800	60,802	80,606	147,609	50,121	61,650	26,838	3,081			12	6			224	207,429		

a Includes officers, firm members, and clerks. For detailed information see Table 12.

MILLS, BY STATES AND TERRITORIES: 1890.

MISCELLANEOUS EXPENSES.							AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES (a).		MACHINERY.			
										Combing machines.		
Total.	Rent paid for tenancy.	Taxes.	Insurance.	Repairs, ordinary, of buildings and machinery.	Interest paid on cash used in the business.	Sundries not elsewhere reported.	Employés.	Wages.	Cards. (Sets.)	Foreign.	American.	
$3,627,245	$370,059	$178,944	$273,254	$618.627	$899,939	$1,286.422	61,209	$18,263,272	1,183	14	2	1
3,422	.....	685	607	450	180	1,500	412	64,838	2	.....	.....	2
197,422	20,866	14,963	18,717	30,239	62,681	49,956	3,134	1,073,135	114	7	.....	3
10,605	.....	530	700	300	5,000	4,075	349	71,952	2	.....	.....	4
68,123	22,319	3,922	7,311	3,306	15,028	16,237	1,878	545,109	14	.....	.....	5
70,437	986	2,832	4,858	8,939	27,771	25,051	962	207,519	18	.....	.....	6
419	320	27	32	10	.....	30	9	2,550	.....	.....	.....	7
2,480	870	.....	910	700	.....	.....	284	51,841	.....	.....	.....	8
1,019	280	62	112	415	.....	150	260	30,165	.....	.....	.....	9
9,747	736	298	553	1,300	2,700	4,160	306	61,466	.....	.....	.....	10
315,786	22,539	35,709	23,839	53,499	76,909	93,291	4,675	1,495,260	52	.....	.....	11
57,901	2,846	2,159	3,865	9,871	9,338	29,822	848	208,344	14	.....	.....	12
24,345	2,500	651	1,669	1,125	9,200	9,200	129	46,356	.....	.....	.....	13
3,803	2,684	111	193	105	60	650	125	34,477	.....	.....	.....	14
241,201	13,197	9,536	12,945	41,021	82,045	82,457	3,178	989,130	112	.....	.....	15
101,146	1,316	13,621	4,665	15,198	32,876	33,470	1,277	342,600	33	.....	.....	16
1,389,427	128,500	54,717	107,526	282,871	347,853	467,960	20,299	6,437,308	701	2	2	17
3,097	374	538	481	924	703	77	184	30,410	.....	.....	.....	18
68,991	15,611	4,355	8,565	6,153	10,683	23,624	1,898	466,030	8	.....	.....	19
741,956	98,461	21,534	48,301	103,337	119,736	350,587	15,941	4,732,754	45	3	.....	20
110,720	13,274	5,243	9,353	18,921	35,951	27,978	1,538	487,350	14	2	.....	21
2,146	600	140	531	700	175	.....	70	17,020	.....	.....	.....	22
63,188	9,355	2,607	5,261	11,086	26,157	8,722	718	269,844	37	.....	.....	23
102,727	9,414	2,710	9,017	12,943	28,788	39,855	2,296	449,724	6	.....	.....	24
37,137	3,011	1,994	3,243	5,214	6,105	17,570	439	147,490	11	.....	.....	25

MATERIALS USED—continued.

Domestic wool in condition purchased.		Total foreign and domestic wool in scoured pounds.	Shoddy.		Waste and wool noils.		Camel's hair and noils.		Mohair and noils.		All other animal hair.		Raw cotton.		
Pounds.	Cost.		Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	
18,005,089	$7,126.953	16,771,492	4,735,144	$878,948	5,503,286	$2,021,492	410,154	$139,149	169	$87	14,173	$3,918	32,432,617	$3,712,215	26
															27
1,232,862	492,016	1,375,289	47,000	10,840	210,174	96,597	123,656	41,360	169	87	500	80	2,429,183	278,640	28
													290,000	12,000	29
818,500	193,975	512,300	27,920	5,980	20,000	6,000	17,500	4,000	.....	.....	.....	.....	125,120	14,050	30
526,495	109,119	565,811	143,572	28,176	89,496	22,150	25,762	5,389	.....	.....	.....	.....	61,413	7,116	31
															32
													300,000	30,000	33
															34
															35
1,759,087	592,442	1,347,447	44,500	11,074	15,621	8,592	.....	.....	.....	.....	.....	.....	2,637,876	305,420	36
222,081	62,834	139,081	30,937	5,675	63,375	13,066	.....	.....	.....	.....	.....	.....	265,555	29,497	37
															38
															39
3,212,324	900,213	2,005,036	960,998	216,614	118,012	35,822	4,200	1,660	.....	.....	.....	.....	728,130	82,166	40
216,008	82,172	216,181	18,623	3,465	36,540	13,958	.....	.....	.....	.....	10,673	2,938	379,620	60,754	41
8,142,627	3,678,132	8,341,895	3,069,939	522,379	4,101,351	1,482,448	212,195	82,407	.....	.....	3,000	900	22,346,828	2,554,026	42
															43
355,000	127,500	308,000	5,000	1,000	20,000	2,000	.....	.....	.....	.....	.....	.....	.....	.....	44
643,583	154,994	352,562	86,342	22,724	223,258	95,416	15,181	1,835	.....	.....	.....	.....	977,171	119,974	45
648,311	273,605	625,200	12,218	2,716	111,700	48,680	.....	.....	.....	.....	.....	.....	1,047,900	114,724	46
															47
510,669	256,009	505,669	16,882	3,522	269,809	126,392	.....	.....	.....	.....	.....	.....	432,860	51,338	48
561,042	180,692	423,021	131,213	24,533	223,000	70,221	11,660	2,498	.....	.....	.....	.....	18,361	2,510	49
56,500	23,250	54,000	140,000	20,250	950	150	.....	.....	.....	.....	.....	.....	482,600	50,000	50

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: California, 2; Colorado, 2; Florida, 1; Kansas, 1; Kentucky, 2 Nebraska, 1; Virginia, 2; Washington, 1; West Virginia, 2.

TABLE 10.—HOSIERY AND KNITTING MILLS,

	STATES AND TERRITORIES.	MATERIALS USED—continued. Yarns not made in mill.									
		Woolen.		Worsted.		Cotton.		Mohair.		Silk.	
		Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.
1	The United States	6,386,370	$3,791,497	4,146,035	$4,279,105	32,248,849	$7,588,973	125	$98	77,597	$418,075
2	Alabama					545,400	95,742				
3	Connecticut	177,100	115,650	177,331	203,943	467,410	129,986			369	1,713
4	Georgia					286,340	57,269				
5	Illinois	251,020	156,655	72,480	54,340	1,223,500	439,201			6,472	36,385
6	Indiana	74,098	31,736	3,342	3,127	231,413	44,167				
7	Iowa	1,275	1,100			3,000	600				
8	Louisiana					120,000	24,000				
9	Maine	29,075	20,494	12,320	10,883	6,000	1,740			25	225
10	Maryland	54,750	34,130	14,000	14,600	115,700	32,175				
11	Massachusetts	456,440	254,273	278,853	314,481	1,828,589	449,367			13,503	67,676
12	Michigan	121,667	75,989	19,400	16,225	67,400	14,800			6,140	36,925
13	Minnesota	64,000	28,000	41,000	34,400	42,000	8,562			2,160	9,016
14	Missouri	30,325	20,250			37,500	9,500				
15	New Hampshire	96,658	71,051	106,478	122,660	113,609	34,670			3,155	14,235
16	New Jersey	113,600	102,435	36,629	39,922	462,582	100,623				
17	New York	1,034,837	693,938	695,260	745,865	5,635,241	1,261,117			10,223	67,169
18	North Carolina					277,000	62,200				
19	Ohio	851,313	508,349	145,857	153,507	296,392	63,730			2,036	10,380
20	Pennsylvania	1,985,017	1,190,683	1,995,905	2,021,023	17,511,141	4,080,238	125	98	29,654	158,881
21	Rhode Island	108,159	56,769	445,633	441,038	2,289,364	518,536			2,000	5,000
22	Utah	31,375	20,988	2,500	3,287	500	125			25	250
23	Vermont	2,000	1,500			233,588	65,129			1,000	4,600
24	Wisconsin	886,786	394,829	84,047	81,804	249,545	52,516			715	4,600
25	All other states	16,875	12,678	15,000	18,000	205,635	42,980			120	1,020

	STATES AND TERRITORIES.	PRODUCTS.									
		Aggregate value.	Hosiery and knit goods.								
			Total value.	Woolen half hose.		Woolen hose.		Merino or mixed half hose.		Merino or mixed hose.	
				Dozens.	Value.	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.
26	The United States	$67,241,013	$63,318,727	1,360,824	$2,892,822	2,242,544	$4,722,796	376,053	$604,773	433,083	$791,227
27	Alabama	190,725	190,725								
28	Connecticut	3,771,567	3,663,661	83,074	179,746	847	5,480	2,308	4,520		
29	Georgia	166,850	166,850								
30	Illinois	1,990,035	1,912,026	128,569	270,295	129,940	304,363	12,007	24,014	10,609	23,140
31	Indiana	827,104	662,139	96,365	208,722	98,243	198,723	1,748	3,058	10,564	16,799
32	Iowa	5,763	4,938	7	42	20	180				
33	Louisiana	151,180	139,660								
34	Maine	76,603	76,603	1,500	3,700	170	1,000			100	200
35	Maryland	180,823	180,823	40,400	61,300	5,500	16,800				
36	Massachusetts	5,082,087	4,717,024	46,610	135,200	167,898	349,118	4,610	12,000	26,922	154,591
37	Michigan	701,322	595,142	24,290	74,270	20,447	107,720	15,020	36,230	7,000	26,200
38	Minnesota	183,743	181,928	16,300	57,200	1,000	3,167				
39	Missouri	81,445	81,445	1,000	1,525	14,100	24,750			30,000	45,000
40	New Hampshire	3,481,922	3,413,618	223,570	418,863	1,015,337	2,081,895	106,843	177,823	31,066	51,748
41	New Jersey	1,091,403	1,077,452	10	40	27,540	37,685	16,653	37,475	5	21
42	New York	24,776,582	23,494,419	99,775	232,100	40,700	90,250	7,500	9,375	45,000	40,000
43	North Carolina	126,875	126,625								
44	Ohio	1,635,948	1,611,558	200,486	352,389	271,610	499,766	44,167	78,333	27,500	32,600
45	Pennsylvania	16,944,237	15,736,675	152,926	270,774	194,152	297,564	133,597	162,945	187,517	289,723
46	Rhode Island	2,516,664	2,276,970	29,500	78,625	151,900	443,573	300	300	50,000	100,000
47	Utah	53,560	47,960	6,198	24,500	8,350	22,000				
48	Vermont	1,105,958	1,105,958	12,520	46,396						
49	Wisconsin	1,635,641	1,478,752	183,174	450,435	80,680	204,080	31,100	56,700	650	1,705
50	All other states	462,976	375,776	14,550	26,700	14,110	34,682	200	2,000	6,150	9,500

BY STATES AND TERRITORIES: 1890—Continued.

MATERIALS USED—continued.

Yarns not made in mill—Continued.				Oil.		Soap.		Chemicals and dyestuffs.	Fuel.			Rent of power and heat.	All other materials.	
Spun silk.		Linen.							Total cost.	Coal.	Wood.			
Pounds.	Cost.	Pounds.	Cost.	Gallons.	Cost.	Pounds.	Cost.	Cost.		Cost.	Cost.	Cost.	Cost.	
42,744	$182,240	301,695	$65,335	528,504	$135,037	6,647,236	$212,844	$564,053	$509,086	$489,968	$19,118	$87,579	$3,017,436	1
				1,200	300				2,043	2,043			5,808	2
8,266	35,867			53,658	9,146	424,209	15,733	26,579	43,496	41,740	1,756	905	239,006	3
				243	89	1,500	50	150	1,139	1,133	6			4
2,200	10,200	4,000	8,000	7,892	2,287	150,560	4,657	9,378	9,202	9,202		3,460	23,010	5
				9,042	2,704	526,917	3,971	10,297	6,229	6,229		930	27,176	6
								10	40	40			225	7
				600	100			500	2,352	2,352		450	800	8
				10	3	300	8	100	106	6	100	80	200	9
				350	35	10,500	525	3,000	1,398	1,398			1,452	10
3,281	11,285	550	560	18,643	4,156	236,307	8,443	78,531	58,709	58,359	350	5,804	339,620	11
300	1,300			3,060	1,197	99,350	3,144	5,187	3,905	3,845	60	850	8,213	12
				450	105	10,200	309	226	912	900	12	500	5,632	13
									20	20		684	70	14
				77,976	14,929	460,240	12,654	63,096	38,679	24,161	14,518	6,153	96,267	15
225	1,200			8,058	3,855	149,410	5,934	14,142	13,688	13,688		660	62,823	16
11,012	50,734	5,600	2,040	259,273	72,355	3,615,139	118,007	161,060	191,867	191,656	211	32,853	1,513,151	17
				459	150	6,000	150	300	875	475	400	100	3,150	18
894	4,090	3,000	820	4,400	1,315	65,800	1,572	7,279	5,669	5,669		1,776	23,598	19
9,343	37,593	288,545	53,915	50,298	10,898	466,229	24,936	128,897	77,376	77,376		20,496	516,989	20
5,225	20,970			13,907	5,369	150,405	5,832	33,627	23,513	23,513		2,478	14,864	21
				300	75	750	25	200	375	375			150	22
14	58			11,206	3,600	93,923	2,496	6,832	9,207	9,117	90	1,931	72,690	23
484	2,193			6,029	1,974	100,407	2,478	13,842	14,461	13,311	1,150	6,721	37,899	24
1,500	6,750			1,450	395	79,000	1,920	820	3,825	3,360	465	748	24,643	25

PRODUCTS—continued.

Hosiery and knit goods—Continued.

Cotton half hose.		Cotton hose.		Merino or mixed shirts and drawers.		All woolen shirts and drawers.		All cotton shirts and drawers.		Leggings and gaiters.		
Dozens.	Value.	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.	
5,341,628	$3,936,536	7,387,259	$6,214,052	2,526,226	$15,055,999	1,088,841	$8,881,777	3,246,590	$9,024,221	25,072	$85,491	26
100,000	65,000	134,000	91,600					10,000	34,125			27
36,000	48,000			187,841	1,619,133	68,177	913,416	159,060	424,118	2,000	5,000	28
68,249	47,474	97,900	93,126					15,000	26,250			29
1,044,054	740,401	27,437	34,373	7,882	97,900	885	17,314	100,000	80,000	1,100	5,400	30
105,176	65,078	23,305	24,636	2,400	24,000	2,500	37,500			425	2,638	31
										20	189	32
46,400	35,300	105,000	95,000					9,360	9,360			33
2,700	3,375									112	644	34
53,085	50,851	3,115	4,704			766	7,660	8,333	33,332	200	800	35
142,907	255,365	385,134	513,788	30,754	216,980	67,610	558,394	434,380	1,282,337	1,725	8,900	36
56,000	59,000	12,000	25,000	19,874	90,915	1,700	62,600	350	10,500	100	375	37
1,000	1,344	1,000	2,667	5,000	100,000	500	10,000					38
4,500	3,300	1,200	1,070									39
		169,000	135,200	57,700	367,550	14,538	143,273					40
35,508	21,269	272,755	237,009	44,393	505,916	3,808	51,652	4,611	40,900			41
58,108	104,177	41,732	34,675	1,888,361	10,158,826	778,011	5,924,735	1,714,825	5,179,811	15,941	49,798	42
69,875	52,075	12,000	13,050					21,750	61,500			43
87,960	66,454	40,150	41,163	11,140	97,950	21,400	194,000	12,600	23,500	450	900	44
3,400,556	2,291,148	5,658,384	4,710,753	147,869	1,051,089	39,941	244,897	655,021	1,502,738	1,942	5,867	45
8,500	9,100	89,040	140,600	19,000	107,000	12,400	130,000	80,000	208,000	954	4,524	46
200	200	100	200			10	225			10	40	47
				47,802	384,500	68,645	477,750	18,000	102,000			48
5,700	5,700	9,107	11,763	6,700	58,000	5,950	82,361	3,000	5,000	45	135	49
15,150	11,925	4,900	3,675	49,510	176,240	2,000	26,000	300	750	50	200	50

TABLE 10.—HOSIERY AND KNITTING MILLS,

	STATES AND TERRITORIES.	PRODUCTS—continued.									
		Hosiery and knit goods—Continued.									
		Gloves and mittens.		Hoods, scarfs, nubias, etc.		Cardigan jackets, fancy jackets, etc.		Shawls.		Fancy knit goods, wristers, etc.	
		Dozens.	Value.	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.
1	The United States	896,150	$1,935,080	342,497	$1,476,430	361,478	$3,576,248	22,990	$115,467	270,533	$759,640
2	Alabama										
3	Connecticut	16,700	23,200			17,800	190,800				
4	Georgia										
5	Illinois	66,540	170,335	12,950	55,491	6,771	57,540	104	260	5,550	31,200
6	Indiana	50,000	74,000	1,600	3,000						
7	Iowa	6	36	300	1,000					1,200	3,500
8	Louisiana										
9	Maine	28,100	58,600	137	2,244	130	2,160	12	180	1,350	4,500
10	Maryland					264	4,076			630	1,300
11	Massachusetts	166,822	328,695	6,660	27,006	49,990	279,762	100	1,800	400	605
12	Michigan	27,840	87,120	1,500	4,500	600	7,200			1,215	3,512
13	Minnesota	2,200	7,200	150	300					25	50
14	Missouri	1,000	3,900			110	1,400			200	500
15	New Hampshire	29,030	35,266							1,000	2,000
16	New Jersey			3,000	18,000	6,702	45,485	50	2,000		
17	New York	92,426	216,360	48,898	210,891	74,473	945,369	4,445	25,200	110,590	263,652
18	North Carolina										
19	Ohio	90,795	167,378	12,476	41,325	200	5,000			13,285	10,800
20	Pennsylvania	78,562	206,780	233,160	1,014,960	128,230	1,943,607	18,209	85,077	75,263	408,567
21	Rhode Island	30,060	52,500	1,800	14,000	1,000	7,500				
22	Utah	125	275			15	500			10	20
23	Vermont	3,200	7,290							53,000	13,022
24	Wisconsin	212,054	493,695	19,836	83,533	679	9,675	50	650	2,715	11,420
25	All other states	750	2,450	30	180	74,574	76,174	20	300	4,100	5,000

a Includes items as follows: abdominal bands, $800; athletic goods, $61,400; bandages, $833; bathing suits and athletic goods, $26,400, blankets, $14,240; braid, $243,000; card rolls, $159; cotton batting, $243; cotton waste, $794; cotton yarn, $69,287; cloaking, $245,000; curtains, $180,000; custom work, $825; dyeing cotton yarn, $1,200; eider down, $122,000; elastic hosiery, $13,797; flannels, $150; fleece lining, $22,663; fringes, $15,000; German socks, $83,100; glace lining, $50,000; Guernsey frocks, $150; horse blankets, $1,000; infants' bands, $11,654; infants' shirts, $1,500; jeans, $6,300; knit boots, $43,000; lace, $150; ladies' caps, $623; ladies' silk vests, $18,000; ladies' skirts and bathing suits, $5,600; overshirts, $11,690; pants, overalls, and shirts, $20,000; paper boxes, $6,240; Persian knit slippers, $846; rag carpets,

BY STATES AND TERRITORIES: 1890—Continued.

PRODUCTS—continued.													
Hosiery and knit goods—Continued.				Partly manufactured products for sale.								All other products. (a)	
Boot and shoe linings.		Jersey cloth.		Total.		Woolen yarn.		Worsted yarn.		Cotton yarn.			
Yards.	Value.	Yards.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Value.	
7,596,711	$1,088,558	3,065,057	$2,157,692	1,369,180	$636,345	852,180	$472,703	17,000	$13,642	500,000	$150,000	$3,285,941	1
													2
685,011	247,038	5,136	3,210	13,000	9,692			13,000	9,692			98,214	3
													4
				104,500	63,500	104,500	63,500					14,509	5
		4,000	3,985	69,327	31,775	69,327	31,775					133,190	6
												825	7
												11,520	8
													9
													10
1,101,900	290,600	438,735	301,883	112,000	74,000	112,000	74,000					291,063	11
												106,180	12
												1,815	13
													14
				41,965	29,047	41,965	29,047					39,257	15
		80,000	80,000	1,627	786	1,627	786					13,165	16
		28,600	9,200	58,000	32,300	58,000	32,300					1,249,863	17
												250	18
				2,500	1,500	2,500	1,500					22,890	19
		1,394,106	1,250,186	404,261	212,745	400,261	208,795	4,000	3,950			994,817	20
5,808,000	548,620	514,000	432,628	500,000	150,000					500,000	150,000	89,694	21
												5,600	22
		600,000	75,000										23
1,800	2,300	480	1,600	46,000	21,000	46,000	21,000					135,889	24
				16,000	10,000	16,000	10,000					77,200	25

$1,679; repairing, $100; Scotch caps, $741,163; shirts, $2,400; shirts and bicycle pants, $360; silk, $85,000; silk hose, $18,280; silk mittens, $29,150; silk nail cloths, $10,000; silk shirts, $100; silk towels, $50; silk underwear, $91,750; silk vests, $30,000; silk and worsted goods, $70,939; skirts, $15,640; sporting goods, $10,000; spun silk hose, $1,400; surgical elastic goods, $3,500; surgical hosiery, $33,950; sweaters, $15,800; theatrical goods, $12,000; theatrical tights, $62,084; tubing, $1,489; waste, $38,866; white cotton shirts from cloth supplied, $60,000; Wilton fringes, $1,050; wool boots and shoes, $113,190; wool boot material, $36,180; worsted hose, $42,900; worsted shirts, $9,000; miscellaneous, $470,271.

TABLE 11.—CLASSIFICATION OF EMPLOYÉS AND WAGES IN ALL CLASSES

	STATES AND TERRITORIES.	Number of establishments.	AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS. (a)									
			Aggregates.		Officers or firm members actively engaged in the industry or in supervision.							
					Males above 16 years.				Females above 15 years.			
			Average number.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.
1	The United States	2,489	219,132	$76,660,742	3,117	43	$29.21	$3,902,747	46	38	$12.52	$21,658
2	Alabama	9	428	67,963	5	38	14.44	2,753				
3	Arkansas	6	31	6,231	9	28	11.80	2,950				
4	California	10	1,375	328,824	24	46	23.84	26,120				
5	Connecticut	98	13,047	4,940,783	155	47	37.41	272,752	1	50	10.00	500
6	Delaware	3	297	103,395	5	47	41.43	9,668				
7	Georgia	18	528	104,353	19	29	23.82	12,950				
8	Illinois	58	2,792	858,889	78	43	25.53	85,807	2	50	13.50	1,350
9	Indiana	55	3,109	817,387	91	40	25.05	90,086	2	33	18.75	1,250
10	Iowa	17	387	135,790	17	36	17.52	10,765				
11	Kentucky	44	2,042	615,055	62	34	30.29	63,536				
12	Louisiana	4	286	52,517	7	48	28.19	9,514				
13	Maine	82	5,453	1,991,676	89	40	31.25	111,024	4	28	12.53	1,410
14	Maryland	17	689	185,397	19	46	19.03	16,650				
15	Massachusetts	293	43,038	16,154,034	372	47	38.73	671,394	1	42	12.00	500
16	Michigan	43	1,428	390,147	48	38	19.83	36,631	2	44	10.00	875
17	Minnesota	24	470	167,323	26	34	27.20	23,855				
18	Mississippi	7	1,082	306,270	11	31	29.42	9,930				
19	Missouri	42	635	156,887	40	28	18.24	20,591				
20	New Hampshire	89	9,400	3,341,695	115	46	29.32	154,333	1	46	21.82	1,000
21	New Jersey	50	7,248	2,416,371	73	46	33.61	112,430	1	25	6.24	156
22	New York	339	37,992	13,033,901	456	43	32.43	641,502	12	44	12.47	6,652
23	North Carolina	32	508	95,739	24	30	12.13	8,861				
24	Ohio	113	3,329	915,656	130	41	22.68	120,560	3	43	16.03	2,070
25	Oregon	6	402	175,313	19	36	26.48	17,875				
26	Pennsylvania	703	55,354	19,764,386	838	44	24.49	910,886	13	36	11.07	5,245
27	Rhode Island	85	19,325	7,049,109	124	48	39.35	234,652				
28	Tennessee	49	998	239,657	51	32	22.07	35,705	2	3	14.40	90
29	Texas	4	359	138,795	3	29	15.03	1,315				
30	Utah	14	344	121,176	16	33	26.59	14,025				
31	Vermont	39	2,303	895,284	46	41	25.35	48,375				
32	Virginia	37	612	166,798	32	37	15.73	18,595				
33	West Virginia	32	307	67,380	30	31	12.34	11,642				
34	Wisconsin	56	3,383	810,463	75	43	28.21	90,280	2	29	9.60	560
35	All other states (b)	11	151	46,098	8	39	15.36	4,735				

a The average weekly earnings per employé are computed from individual reports. The average number of employés reported by each establishment is multiplied by the number of weeks embraced by the term of operation; the result is the number of weeks required for one employé to perform the labor. Aggregating such results of individual reports, the number of weeks required for one employé to perform the labor is obtained. This number used as a divisor for the total wages produces the true average weekly earnings.

OF WOOL MANUFACTURE, BY STATES AND TERRITORIES: 1890.

AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS—continued.

Clerks.								Operatives and skilled.								
Males above 16 years.				Females above 15 years.				Males above 16 years.				Females above 15 years.				
Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	
1,933	47	$19.34	$1,749,820	177	46	$8.34	$68,623	80,194	47	$9.02	$34,191,923	69,706	47	$5.94	$19,637,084	1
1	50	6.00	300	.....	.....	.....	.....	29	45	7.67	10,036	133	50	4.30	28,596	2
.....	.....	.....	.....	.....	.....	.....	.....	7	33	6.04	1,385	12	31	4.69	1,740	3
20	34	27.19	18,470	.....	.....	.....	.....	853	25	8.74	189,377	363	25	7.23	65,819	4
72	48	19.82	68,306	3	50	7.80	1,170	6,053	48	8.93	2,618,254	3,633	48	6.43	1.125,881	5
2	46	17.78	1,630	2	42	12.00	1,000	79	45	8.84	31,306	37	45	4.45	7,365	6
9	45	10.47	4,277	.....	.....	.....	.....	85	35	7.35	22,118	166	44	4.78	34,734	7
41	46	16.37	30,837	2	46	11.89	1,090	063	46	8.83	271,688	1,259	48	5.44	325,270	8
36	46	14.69	24,277	6	47	6.84	1,937	865	45	7.87	305,782	907	47	4.28	181,835	9
21	46	19.14	18,345	2	29	9.60	560	133	44	8.90	52,552	157	45	5.51	38,887	10
27	47	22.72	28,592	4	38	7.33	1,100	785	45	7.26	257,420	718	46	4.96	164,534	11
.....	.....	.....	.....	.....	.....	.....	.....	20	41	9.92	8,188	158	38	5.02	29,750	12
35	46	16.26	25,982	1	48	7.83	375	2,819	47	8.79	1,160,646	1,659	46	5.98	457,670	13
5	50	18.80	4,700	.....	.....	.....	.....	205	47	7.59	73,667	135	50	5.99	40.019	14
325	49	21.37	339,417	39	50	9.20	17,777	19,478	49	8.79	8,319,824	14,113	49	6.03	4,155,330	15
26	46	18.36	21,917	1	31	2.40	75	377	46	7.96	137,052	458	47	5.28	113.873	16
8	42	29.42	9,806	1	50	14.40	720	179	45	8.39	67,753	148	47	4.74	32,915	17
2	25	27.00	1,350	.....	.....	.....	.....	383	48	8.14	149.616	384	49	4.95	92,800	18
18	39	13.64	9,477	4	43	8.19	1,408	191	34	7.93	51,464	202	40	5.25	55,535	19
55	48	23.57	61.782	6	47	8.48	2,404	3,620	48	8.67	1,525,023	3,196	49	6.11	956,602	20
51	48	20.44	49,667	1	50	26.00	1,300	2.949	49	8.51	1,222,428	2,781	49	4.98	684.605	21
346	46	20.25	321,377	14	42	8.81	5,192	11,637	47	9.09	4,949,948	11,481	48	5.91	3,225,142	22
6	47	16.59	4,700	.....	.....	.....	.....	138	43	5.66	33,529	147	45	3.86	25,708	23
36	48	17.19	29,404	4	50	6.62	1,324	616	44	8.69	233,921	1,112	46	4.42	228,522	24
25	48	12.42	14,900	.....	.....	.....	.....	148	38	12.89	72,406	31	28	6.95	6,087	25
502	47	18.91	442,169	75	47	7.48	26,533	16.794	47	9.84	7,698,239	16.776	46	6.30	4,836.025	26
152	49	17.49	130,654	4	50	7.19	1,438	8,339	49	8.98	3,660,631	6,586	50	6.20	2,023.010	27
18	43	16.64	12,825	.....	.....	.....	.....	332	43	6.48	91,636	412	46	4.02	75,324	28
14	50	24.00	16,800	.....	.....	.....	.....	101	47	10.91	52,100	156	50	5.15	40,150	29
4	39	16.21	2,550	.....	.....	.....	.....	145	41	10.80	64,834	155	44	5.40	36,583	30
11	48	15.03	7,859	.....	.....	.....	.....	1,006	48	9.05	464.286	867	48	6.59	274,021	31
14	45	8.03	5,010	1	42	3.36	140	288	44	7.13	90,852	220	42	4.67	43,160	32
6	39	6.81	1,590	1	29	1.71	50	127	34	7.34	31,790	95	39	4.31	15,788	33
45	46	19.89	40,850	4	40	15.54	2,460	653	47	8.62	261,987	944	48	4.51	204,889	34
.....	.....	.....	.....	2	40	7.20	570	28	35	10.49	10,185	45	41	4.79	8,915	35

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Colorado, 2; Florida, 1; Idaho, 1; Kansas, 2; Nebraska, 1; South Carolina, 1; South Dakota, 2; Washington, 1.

TABLE 11.—CLASSIFICATION OF EMPLOYÉS AND WAGES IN ALL CLASSES

	STATES AND TERRITORIES.	AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS—continued.									
		Operatives and skilled—Continued.				Unskilled.					
		Children.				Males above 16 years.				Females above 15 years.	
		Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.
1	The United States	12,761	47	$3.34	$2,013,239	4,333	47	$8.41	$1,728,113	432	48
2	Alabama	250	50	1.94	24,300	1	50	6.00	300		
3	Arkansas	3	33	1.56	156						
4	California	24	15	4.24	1,554	28	26	10.73	7,823		
5	Connecticut	498	49	3.58	86,599	277	48	8.84	116,487	43	49
6	Delaware	39	43	2.63	4,426	8	45	9.58	3,472		
7	Georgia	71	44	2.18	6,835	12	43	6.75	3,472		
8	Illinois	66	45	3.15	9,361	34	49	7.91	13,220	40	49
9	Indiana	131	47	2.08	12,789	38	47	7.59	13,575		
10	Iowa	15	46	2.78	1,908	15	46	8.45	5,860	2	50
11	Kentucky	178	47	3.03	25,105	36	45	8.72	14,124	10	50
12	Louisiana					1	38	9.60	360		
13	Maine	150	47	3.21	22,659	205	47	7.45	71,525	2	50
14	Maryland	68	50	4.31	14,515	5	50	8.80	2,200		
15	Massachusetts	1,678	49	3.56	292,711	1,001	49	8.51	418,655	73	48
16	Michigan	30	37	2.69	3,018	24	49	6.43	7,581		
17	Minnesota	1	29	3.29	96	6	45	10.14	2,725		
18	Mississippi	224	49	2.53	27,742	6	42	7.20	1,800		
19	Missouri	59	32	2.75	5,240	12	33	7.40	2,898		
20	New Hampshire	213	50	3.54	37,386	207	49	8.36	84,246	107	50
21	New Jersey	290	48	3.53	49,433	149	49	8.26	60,206		
22	New York	1,941	48	3.39	315,210	598	46	8.53	232,402	31	43
23	North Carolina	60	48	2.66	7,693	18	49	4.87	4,283		
24	Ohio	196	48	2.95	27,987	40	48	7.76	15,045	1	13
25	Oregon	23	47	3.37	3,625	16	42	8.33	5,555		
26	Pennsylvania	4,521	46	3.47	715,276	1,038	47	8.89	432,700	67	47
27	Rhode Island	1,705	50	3.30	279,171	363	49	8.01	143,733	44	50
28	Tennessee	112	49	2.19	12,101	24	45	6.71	7,251	3	50
29	Texas	41	48	2.84	5,580	12	47	8.42	4,700		
30	Utah	19	36	2.32	1,584	5	38	8.39	1,600		
31	Vermont	39	49	3.14	5,932	80	47	7.53	28,412		
32	Virginia	30	45	2.92	3,982	13	44	5.27	2,994		
33	West Virginia	10	32	1.18	374	6	38	4.01	918		
34	Wisconsin	72	47	2.57	8,781	54	47	6.98	17,541	9	50
35	All other states	4	9	2.93	110	1	50	9.00	450		

OF WOOL MANUFACTURE, BY STATES AND TERRITORIES: 1890—Continued.

AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS—continued.						PIECEWORKERS—AVERAGE NUMBER EMPLOYED AND TOTAL WAGES.							
Unskilled—Continued.													
Females above 15 years—Continued.		Children.				Summary.		Males above 16 years.		Females above 15 years.		Children.	
Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Wages.	Number.	Wages.	Number.	Wages.	Number.	Wages.
$5.31	$110,729	187	48	$3.16	$28,229	46,246	$13,208,577	8,869	$3,823,395	35,632	$9,141,431	1,745	$243,751
						9	1,678			9	1,678		
						63	19,661	8	2,053	55	17,608		
7.34	15,298	28	49	3.95	5,454	2,284	630,082	350	141,236	1,877	475,531	57	13,315
						125	44,528	52	25,220	73	19,308		
						166	19,967	10	1,500	126	16,140	30	2,327
4.80	9,440	3	50	3.00	450	604	110,376	15	4,035	585	106,217	4	124
		1	42	2.40	100	1,032	185,756	188	32,912	803	148,944	41	3,900
5.00	500	1	50	2.74	137	24	6,276	3	1,200	21	5,076		
5.00	2,500					222	58,144	13	4,824	209	53,320		
						100	4,705			100	4,705		
4.00	400					489	139,985	143	71,197	346	68,788		
						252	33,646	2	450	185	27,476	65	5,720
6.00	21,135	11	48	3.95	2,088	5,947	1,915,203	1,182	544,048	4,612	1,343,844	153	27,311
						462	69,125	14	3,278	446	65,727	2	120
						101	29,453	1	100	100	29,353		
						72	23,032	13	6,369	59	16,663		
						49	10,274	7	2,099	42	8,175		
5.30	28,245	12	49	3.46	2,038	1,859	488,636	332	118,728	1,492	365,241	35	4,667
						953	236,146	142	55,793	765	174,208	46	6,145
4.04	5,422	11	44	3.49	1,700	11,465	3,329,354	1,992	790,757	9,291	2,507,475	182	31,122
						115	10,965	8	875	83	8,590	24	1,500
4.80	60					1,191	256,763	32	13,150	1,126	238,981	33	4,632
						140	54,865	37	18,597	103	36,358		
4.57	14,329	76	46	2.71	9,498	14,654	4,673,486	3,899	1,793,661	9,870	2,760,261	885	119,564
5.14	11,300	37	50	3.25	6,014	1,971	558,506	333	157,779	1,504	380,607	134	20,120
5.00	750	4	50	2.50	500	40	3,475	3	185	29	2,800	8	490
						32	18,150	12	7,600	20	10,550		
		2	50	2.00	200	192	66,199	19	7,459	172	58,590	1	150
						14	2,065	9	1,511	4	545	1	9
		1	46	1.09	50	31	5,178	9	2,130	22	3,048		
3.00	1,350					1,525	181,765	29	9,739	1,452	169,491	44	2,535
						63	21,133	12	5,000	51	16,133		

TABLE 12.—CLASSIFICATION OF EMPLOYÉS AND WAGES IN EACH CLASS

	CLASSES BY STATES AND TERRITORIES.	Number of establishments.	AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS. (a)								
			Aggregates.		Officers or firm members actively engaged in the industry or in supervision.						
					Males above 16 years.				Females above 15 years.			
			Average number.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.
1	Woolen mills	1,311	79,351	$28,478,931	1,567	40	$26.71	$1,687,495	12	29	$13.11	$4,505
2	Alabama	6	16	3,125	3	30	11.31	1,025				
3	Arkansas	6	31	6,231	9	28	11.80	2,950				
4	California	8	1,264	287,658	22	46	22.93	23,120				
5	Connecticut	55	5,173	2,035,462	79	47	36.21	134,635	1	50	10.00	500
6	Delaware	3	297	103,395	5	47	41.43	9,668				
7	Georgia	14	179	32,401	12	18	30.75	6,790				
8	Illinois	23	914	313,780	28	38	25.99	27,745				
9	Indiana	45	2,103	600,062	68	37	25.11	62,886	2	33	18.75	1,250
10	Iowa	14	378	133,240	15	36	18.43	9,945				
11	Kentucky	40	1,803	554,544	50	35	28.52	49,486				
12	Maine	75	4,323	1,629,888	83	39	30.98	101,474	2	13	20.40	510
13	Maryland	9	383	123,931	7	39	16.18	4,450				
14	Massachusetts	165	19,813	7,586,575	218	46	34.66	347,786				
15	Michigan	32	518	156,128	29	34	16.98	16,468	1	38	10.00	375
16	Minnesota	21	341	120,967	21	31	23.47	15,155				
17	Mississippi	7	1,082	306,270	11	31	29.42	9,930				
18	Missouri	35	510	122,410	35	26	17.22	15,715				
19	New Hampshire	46	4,189	1,643,168	68	47	30.72	97,777				
20	New Jersey	21	4,228	1,481,315	34	48	32.29	52,470				
21	New York	91	2,969	1,046,778	96	36	23.15	80,911				
22	North Carolina	27	324	65,329	19	26	11.69	5,711				
23	Ohio	64	1,032	294,365	71	35	19.26	48,260	1	50	8.00	400
24	Oregon	6	402	175,313	19	36	26.48	17,875				
25	Pennsylvania	264	16,061	5,729,982	295	44	22.51	290,365	2	38	14.40	1,080
26	Rhode Island	40	6,028	2,297,416	60	49	33.54	97,692				
27	Tennessee	49	998	239,657	51	32	22.07	35,705	2	3	14.40	90
28	Texas	4	359	138,795	3	29	15.03	1,315				
29	Utah	9	274	104,156	11	30	32.87	19,955				
30	Vermont	29	1,585	625,440	38	41	24.69	38,475				
31	Virginia	35	444	117,023	30	38	15.76	17,845				
32	West Virginia	30	287	61,919	27	31	11.88	9,872				
33	Wisconsin	32	982	324,772	45	41	22.05	40,200	1	33	9.00	300
34	All other states (b)	6	61	17,436	5	38	14.81	2,839				
35	Worsted mills	143	43,593	15,880,183	255	47	46.25	556,891				
36	Connecticut	10	2,261	875,372	16	49	38.79	30,667				
37	Massachusetts	33	12,021	4,556,997	58	49	56.43	169,603				
38	New Hampshire	4	1,963	678,552	6	50	32.00	9,600				
39	New Jersey	6	954	284,102	10	50	16.03	7,950				
40	New York	16	3,953	1,481,194	33	48	54.90	86,925				
41	Pennsylvania	41	9,453	3,350,113	71	45	38.29	123,170				
42	Rhode Island	28	11,757	4,263,968	45	49	50.74	112,676				
43	All other states (b)	5	1,231	389,885	16	37	43.06	25,300				
44	Carpet mills (other than rag)	173	29,121	11,633,116	213	48	32.41	329,638				
45	Massachusetts	7	5,144	1,892,072	8	50	109.32	43,500				
46	New Jersey	6	585	212,554	5	50	94.80	23,700				
47	New York	15	8,954	3,345,165	27	50	49.32	66,375				
48	Pennsylvania	142	12,674	5,509,805	165	47	23.29	181,813				
49	All other states (b)	3	1,764	673,520	8	46	38.43	14,250				
50	Felt mills	34	2,266	1,041,296	65	46	32.95	97,754				
51	Massachusetts	7	340	140,528	5	50	54.00	13,500				
52	New York	11	820	361,944	19	45	38.85	33,344				
53	Ohio	4	183	92,161	12	50	30.17	18,100				
54	Pennsylvania	3	176	111,682	8	44	24.74	8,660				
55	All other states (b)	9	747	334,981	21	43	26.59	24,150				
56	Wool hat mills	32	3,592	1,363,944	58	44	31.78	81,837				
57	Massachusetts	7	1,045	482,602	15	49	44.73	32,987				
58	New York	5	997	361,512	6	43	79.61	20,400				
59	Pennsylvania	17	1,049	330,950	32	43	14.81	20,450				
60	All other states (b)	3	501	189,780	5	40	40.00	8,000				

a The average weekly earnings per employé are computed from individual reports. The average number of employés reported by each establishment is multiplied by the number of weeks embraced by the term of operation; the result is the number of weeks required for one employé to perform the labor. This number used as a divisor for the total wages produces the true average weekly earnings.

OF WOOL MANUFACTURE, BY STATES AND TERRITORIES: 1890.

AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS—continued.

Clerks.								Operatives and skilled.								
Males above 16 years.				Females above 15 years.				Males above 16 years.				Females above 15 years.				
Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	
788	47	$16.97	$622,828	69	47	$7.66	$24,909	38,480	47	$8.63	$15,574,144	25,585	47	$5.90	$7,102,070	1
.....	.....	.....	.....	.....	.....	.....	.....	8	32	5.57	1,440	4	50	2.40	480	2
.....	.....	.....	.....	.....	.....	.....	.....	7	33	6.04	1,385	12	31	4.69	1,740	3
20	34	27.19	18,470	.....	.....	.....	.....	844	25	8.67	184,535	303	21	6.93	44,915	4
24	47	16.97	19,308	.....	.....	.....	.....	2,992	49	8.51	1,234,374	1,665	49	6.49	524,427	5
2	46	17.78	1,630	2	42	12.00	1,000	79	45	8.84	31,306	37	45	4.45	7,365	6
5	42	12.37	2,577	.....	.....	.....	.....	57	29	6.50	10,799	55	32	3.55	6,183	7
21	45	13.78	13,038	.....	.....	.....	.....	403	46	8.51	158,613	371	47	5.45	94,467	8
31	47	14.24	20,556	5	47	7.02	1,637	752	44	7.77	259,830	752	47	4.34	151,845	9
21	46	19.14	18,345	2	29	9.60	560	132	44	8.85	51,832	151	45	5.52	37,877	10
26	47	22.60	27,780	2	50	7.40	740	684	47	7.02	226,817	627	49	5.17	158,783	11
30	45	15.71	21,182	1	48	7.83	375	2,446	46	8.82	999,684	1,336	45	6.18	373,517	12
.....	.....	.....	.....	.....	.....	.....	.....	188	47	7.47	66,275	118	49	6.51	37,991	13
135	48	18.38	117,977	8	49	9.64	3,766	11,063	48	8.63	4,565,561	5,989	48	6.42	1,833,259	14
9	41	12.87	4,745	1	31	2.40	75	235	44	7.67	80,040	171	45	4.93	37,611	15
3	44	23.63	3,150	1	50	14.40	720	166	45	8.30	62,271	76	44	4.47	14,915	16
2	25	27.00	1,350	.....	.....	.....	.....	383	48	8.14	149,616	384	49	4.95	92,800	17
17	38	13.58	8,757	2	36	11.35	816	190	34	7.95	51,200	168	38	5.06	32,285	18
31	49	26.28	39,780	4	50	8.91	1,781	2,223	49	8.72	945,486	1,466	49	6.18	443,597	19
28	49	18.38	25,387	1	50	26.00	1,300	1,898	50	8.67	818,094	1,963	50	5.19	509,487	20
34	44	12.33	18,376	1	50	15.60	780	1,290	47	8.74	532,937	981	48	5.58	260,678	21
6	47	16.59	4,700	.....	.....	.....	.....	126	43	5.41	29,029	112	45	3.54	17,708	22
14	44	15.67	9,564	.....	.....	.....	.....	402	41	7.25	119,430	359	44	4.77	74,663	23
25	48	12.42	14,900	.....	.....	.....	.....	148	38	12.89	72,406	31	28	6.95	6,087	24
167	49	17.04	138,039	35	50	5.79	10,124	6,557	47	9.04	2,790,817	4,752	46	5.98	1,307,355	25
56	50	13.66	38,092	.....	.....	.....	.....	3,072	50	8.60	1,311,597	1,868	50	6.32	587,029	26
18	43	16.64	12,825	.....	.....	.....	.....	332	43	6.48	91,636	412	46	4.02	75,324	27
14	50	24.00	16,800	.....	.....	.....	.....	101	47	10.91	52,100	156	50	5.15	40,150	28
4	39	16.21	2,550	.....	.....	.....	.....	145	41	10.80	64,834	95	41	6.02	23,383	29
6	47	14.22	4,000	.....	.....	.....	.....	836	48	8.97	363,291	575	49	6.48	181,466	30
14	45	8.03	5,010	1	42	3.36	140	229	43	6.88	67,627	115	40	3.90	18,060	31
6	39	6.81	1,590	1	29	1.71	50	123	34	7.24	30,199	82	37	4.54	13,088	32
19	47	13.72	12,350	1	33	21.60	720	347	45	8.94	140,886	371	48	4.84	86,520	33
.....	.....	.....	.....	1	29	11.14	325	22	34	10.87	8,197	28	40	4.88	5,515	34
332	49	22.66	366,947	28	48	8.48	11,379	16,862	48	9.17	7,460,463	17,543	48	5.93	5,036,400	35
11	49	21.07	11,434	.....	.....	.....	.....	1,208	49	9.02	536,130	662	48	6.55	206,700	36
109	50	27.16	147,886	19	50	9.33	8,861	4,740	50	8.85	2,093,718	5,006	50	5.88	1,466,404	37
5	50	30.68	7,670	.....	.....	.....	.....	706	50	8.38	295,898	1,091	50	5.91	322,502	38
7	49	13.87	4,710	.....	.....	.....	.....	299	48	8.75	124,402	503	49	4.19	104,301	39
50	49	21.01	51,291	.....	.....	.....	.....	1,434	49	9.20	642,656	1,543	48	5.98	440,547	40
63	47	18.19	53,803	4	48	5.93	1,136	2,990	45	10.19	1,359,197	4,104	46	5.90	1,108,360	41
81	49	21.17	83,341	3	50	6.81	1,022	5,035	48	9.19	2,241,162	4,283	50	6.18	1,310,043	42
6	47	24.40	6,812	2	25	7.20	360	450	46	8.10	167,300	351	43	5.08	77,543	43
166	48	22.30	178,388	6	50	9.50	2,831	11,269	49	9.72	5,389,809	10,702	49	6.49	3,430,044	44
27	50	24.14	32,483	.....	.....	.....	.....	2,177	50	9.11	988,258	2,264	50	5.30	598,761	45
1	50	30.00	1,500	.....	.....	.....	.....	272	50	7.70	104,336	51	50	4.36	11,106	46
48	50	25.30	60,423	.....	.....	.....	.....	3,126	50	9.58	1,491,135	4,123	50	6.14	1,260,120	47
85	47	19.92	78,982	6	50	9.50	2,831	4,938	48	10.29	2,460,197	3,687	49	7.61	1,362,949	48
5	50	20.00	5,000	.....	.....	.....	.....	756	50	9.16	345,883	577	50	6.83	197,108	49
55	49	21.65	58,732	4	47	7.63	1,430	1,286	48	9.99	620,641	346	48	5.51	91,634	50
9	50	14.10	6,345	.....	.....	.....	.....	276	48	8.04	107,465	34	50	4.47	7,591	51
25	50	20.38	25,477	3	49	8.16	1,190	418	49	9.41	191,719	136	49	5.86	38,701	52
4	50	17.00	3,400	.....	.....	.....	.....	105	50	10.62	55,742	39	50	5.08	9,907	53
2	44	17.26	1,510	1	42	5.76	240	68	44	23.75	70,756	4	42	4.81	802	54
15	48	30.34	22,000	.....	.....	.....	.....	419	48	9.66	194,959	133	47	5.59	34,633	55
31	44	22.37	30,827	3	47	9.27	1,304	1,415	44	9.13	571,414	490	44	5.27	113,714	56
11	49	17.73	9,640	2	50	11.24	1,124	512	49	9.79	245,383	194	50	5.75	55,271	57
15	41	28.22	17,492	.....	.....	.....	.....	341	42	9.43	135,113	32	45	4.80	6,903	58
3	44	15.20	1,995	1	41	4.43	180	374	42	7.13	111,901	131	41	4.21	22,672	59
2	42	20.40	1,700	.....	.....	.....	.....	188	40	10.54	79,017	133	39	5.64	28,868	60

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Woolen goods, Idaho, 1; Kansas, 1; Louisiana, 1; South Carolina, 1; South Dakota, 2. Worsted goods, Kentucky, 2; Maine, 1; Ohio, 1; Wisconsin, 1. Carpets, Connecticut, 2; Rhode Island, 1. Felt goods, Connecticut, 2; Indiana, 1; Maine, 1; Michigan, 1; New Hampshire, 2; New Jersey. 2. Wool hats, Connecticut, 2; Maine, 1.

TABLE 12.—CLASSIFICATION OF EMPLOYÉS AND WAGES IN EACH CLASS

	CLASSES BY STATES AND TERRITORIES.	AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS—continued.									
		Operatives and skilled—Continued.				Unskilled.					
		Children.				Males above 16 years.				Females above 15 years.	
		Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.
1	Woolen mills	4,299	46	$3.38	$659,520	1,870	47	$8.29	$733,121	87	47
2	Alabama										
3	Arkansas	3	33	1.56	156						
4	California	24	15	4.24	1,554	28	26	10.73	7,823		
5	Connecticut	132	48	3.63	23,217	128	48	8.43	52,197	14	48
6	Delaware	39	43	2.63	4,426	8	45	9.58	3,472		
7	Georgia	25	35	1.82	1,570	7	42	7.19	2,097		
8	Illinois	24	41	2.42	2,361	15	49	8.00	5,898	10	50
9	Indiana	108	47	2.07	10,389	22	47	8.25	8,504		
10	Iowa	15	46	2.78	1,908	15	46	8.45	5,860	2	50
11	Kentucky	178	47	3.03	25,105	32	47	8.55	12,929	10	50
12	Maine	88	45	3.74	14,859	124	45	8.41	46,736		
13	Maryland	68	50	4.31	14,515	2	50	7.00	700		
14	Massachusetts	701	48	3.61	121,183	444	48	8.90	190,912	21	42
15	Michigan	29	37	2.70	2,918	9	49	6.00	2,650		
16	Minnesota	1	29	3.29	96	2	50	13.10	1,310		
17	Mississippi	224	49	2.53	27,742	6	42	7.20	1,800		
18	Missouri	59	32	2.75	5,240	12	33	7.40	2,898		
19	New Hampshire	142	49	3.64	25,508	133	49	8.23	53,342	10	48
20	New Jersey	78	50	3.30	12,886	92	50	7.98	36,612		
21	New York	191	48	3.38	31,072	64	48	8.52	26,176	3	50
22	North Carolina	29	46	2.39	3,193	15	49	4.78	3,483		
23	Ohio	60	45	3.01	8,109	20	47	6.83	6,471		
24	Oregon	23	47	3.37	3,625	16	42	8.33	5,555		
25	Pennsylvania	1,459	44	3.51	227,779	423	48	8.27	166,167	9	50
26	Rhode Island	347	50	3.56	61,555	102	49	8.11	40,941	5	50
27	Tennessee	112	49	2.19	12,101	24	45	6.71	7,251	3	50
28	Texas	41	48	2.84	5,580	12	47	8.42	4,700		
29	Utah	14	31	1.92	834	5	38	8.39	1,600		
30	Vermont	34	49	2.96	4,952	57	49	7.22	20,073		
31	Virginia	30	45	2.92	3,982	11	43	4.90	2,294		
32	West Virginia	10	32	1.18	374	6	38	4.01	918		
33	Wisconsin	7	41	2.16	621	35	46	7.06	11,302		
34	All other states	4	9	2.93	110	1	50	9.00	450		
35	Worsted mills	3,747	49	3.38	623,345	1,100	49	8.16	437,570	184	50
36	Connecticut	147	48	4.02	28,378	32	42	8.57	11,449		
37	Massachusetts	713	50	3.47	123,431	414	50	8.00	165,587	48	50
38	New Hampshire	15	50	3.30	2,472	33	50	7.94	13,100	97	50
39	New Jersey	78	50	3.52	13,650	19	49	8.94	8,309		
40	New York	285	50	3.60	51,317	81	50	7.80	31,545		
41	Pennsylvania	1,056	48	3.44	173,672	195	46	9.90	88,200		
42	Rhode Island	1,310	50	3.25	211,425	242	49	7.88	94,271	39	50
43	All other states	143	50	2.66	19,000	84	49	6.12	25,109		
44	Carpet mills (other than rag)	1,789	49	3.70	327,647	350	49	9.32	160,425	43	48
45	Massachusetts	135	50	4.25	28,697	79	50	9.17	36,142		
46	New Jersey					19	49	7.07	6,542		
47	New York	716	50	3.53	125,503	67	50	8.86	29,539		
48	Pennsylvania	808	49	3.84	152,150	134	48	10.04	64,972	18	46
49	All other states	130	50	3.28	21,297	51	50	9.11	23,230	25	50
50	Felt mills	123	47	3.35	19,410	70	49	9.17	31,418		
51	Massachusetts	8	50	4.02	1,606	8	50	10.05	4,021		
52	New York	40	49	3.15	6,240	36	49	8.56	15,193		
53	Ohio	13	50	3.38	2,200	3	50	10.75	1,612		
54	Pennsylvania	38	42	4.04	6,396	5	43	11.28	2,444		
55	All other states	24	49	2.51	2,968	18	49	9.22	8,148		
56	Wool hat mills	139	46	2.48	15,922	144	44	7.04	48,192	33	42
57	Massachusetts	35	48	2.72	4,555	7	47	9.70	3,192		
58	New York	36	42	3.72	5,595	29	40	10.38	12,001	12	40
59	Pennsylvania	68	48	1.78	5,772	90	45	6.62	26,949	17	43
60	All other states					18	42	8.02	6,050	4	42

OF WOOL MANUFACTURE, BY STATES AND TERRITORIES: 1890—Continued.

AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS—continued.						PIECEWORKERS—AVERAGE NUMBER EMPLOYED AND TOTAL WAGES.								
Unskilled—Continued.														
Females above 15 years—Continued.		Children.				Summary.		Males above 16 years.		Females above 15 years.		Children.		
Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Wages.	Number.	Wages.	Number.	Wages.	Number.	Wages.	
$4.55	$18,805	68	48	$2.91	$9,443	6,526	$2,042,091	1,780	$752,058	4,487	$1,250,399	259	$39,634	1
						1	180			1	180			2
														3
						23	7,241	8	2,053	15	5,188			4
5.83	3,898	9	48	3.85	1,660	129	41,246	43	20,670	82	19,614	4	962	5
						125	44,528	52	25,220	73	19,308			6
						18	2,385			16	2,260	2	125	7
4.00	2,000					42	9,658	15	4,035	24	5,523	3	100	8
						363	83,165	18	4,912	343	77,953	2	300	9
5.00	500	1	50	2.74	137	24	6,276	3	1,200	21	5,076			10
5.00	2,500					194	50,404	1	144	193	50,260			11
						213	71,551	68	31,525	145	40,026			12
														13
4.30	3,800	6	47	3.55	991	1,228	401,340	412	173,235	708	208,924	108	19,181	14
						34	11,246	6	1,498	26	9,628	2	120	15
						71	23,350	1	100	70	23,250			16
						72	23,032	13	6,369	59	16,663			17
						27	5,499	7	2,099	20	3,400			18
4.46	2,135	12	49	3.46	2,038	100	31,724	26	10,382	59	18,510	15	2,832	19
						134	25,079	1	767	87	18,167	46	6,145	20
4.33	650					309	95,198	33	13,414	267	80,576	9	1,208	21
						17	1,505	4	375	13	1,130			22
						105	27,468	31	12,650	74	14,818			23
						140	54,865	37	18,507	103	36,358			24
3.05	1,372	31	47	2.51	3,623	2,331	793,261	817	347,500	1,464	438,188	50	7,573	25
4.80	1,200	2	50	2.44	244	516	158,166	129	54,608	383	103,154	4	404	26
5.00	750	4	50	2.50	500	40	3,475	3	185	29	2,800	8	490	27
						32	18,150	12	7,600	20	10,550			28
														29
		2	50	2.00	200	37	12,983	10	4,695	26	8,138	1	150	30
						14	2,065	9	1,511	4	545	1	9	31
		1	46	1.09	50	31	5,178	9	2,130	22	3,048			32
						156	31,873	12	4,674	140	27,164	4	35	33
														34
5.75	52,869	44	50	3.56	7,829	3,498	1,326,490	1,109	532,592	2,355	788,448	34	5,450	35
		5	50	4.68	1,170	180	49,444	111	32,440	69	17,004			36
6.94	16,659	3	50	4.89	733	911	373,115	308	148,015	602	224,900	1	200	37
5.38	26,110					10	1,200			10	1,200			38
						38	20,780	10	8,290	28	12,490			39
						527	176,913	174	69,210	353	107,703			40
		1	50	3.12	156	969	442,419	310	190,965	655	250,554	4	900	41
5.18	10,100	35	50	3.30	5,770	684	194,158	122	51,271	538	138,537	29	4,350	42
						179	68,461	74	32,401	105	36,060			43
7.42	15,382	17	50	3.79	3,198	4,566	1,795,754	2,036	960,223	2,331	802,823	199	32,708	44
		2	50	3.64	364	452	163,867	38	21,049	414	142,818			45
						237	65,370	98	29,895	139	35,475			46
						847	312,070	438	181,229	387	126,441	22	4,400	47
6.06	4,982	3	48	3.55	510	2,830	1,200,419	1,454	724,402	1,211	450,209	165	25,808	48
8.32	10,400	12	50	3.87	2,324	200	54,028	8	3,648	180	47,880	12	2,500	49
						317	120,277	118	69,737	160	42,639	39	7,901	50
														51
						143	50,080	42	25,790	100	24,197	1	93	52
						7	1,200			7	1,200			53
						50	20,874	28	17,026	4	1,040	18	2,808	54
						117	48,123	48	26,921	49	16,202	20	5,000	55
3.51	4,833	11	42	2.24	1,026	1,268	494,875	661	360,424	598	133,114	9	1,337	56
						269	130,450	158	99,197	111	31,253			57
3.95	1,878					526	162,130	241	106,912	276	53,881	9	1,337	58
2.94	2,155	11	42	2.24	1,026	322	136,950	189	111,175	133	25,775			59
4.80	800					151	65,345	73	43,140	78	22,205			60

TABLE 12.—CLASSIFICATION OF EMPLOYÉS AND WAGES IN EACH CLASS

	CLASSES BY STATES AND TERRITORIES.	Number of establishments.	AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS.								
			Aggregates.		Officers or firm members actively engaged in the industry or in supervision.						
					Males above 16 years.				Females above 15 years.			
			Average number.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.
61	Hosiery and knitting mills..	796	61,209	$18,263,272	959	44	$26.94	$1,149,132	34	41	$12.37	$17,153
62	Alabama	3	412	64,838	2	50	17.28	1,728				
63	Connecticut	27	3,134	1,073,135	44	47	38.28	78,800				
64	Georgia	4	349	71,952	7	46	19.08	6,160				
65	Illinois	35	1,878	545,109	50	46	25.31	58,062	2	50	13.50	1,350
66	Indiana	9	962	207,519	21	48	25.49	25,700				
67	Iowa	3	9	2,550	2	38	10.93	820				
68	Louisiana	3	284	51,841	6	48	31.83	9,150				
69	Maine	4	260	30,165	1	28	37.33	1,050	2	44	10.29	900
70	Maryland	8	306	61,466	12	50	20.33	12,200				
71	Massachusetts	74	4,675	1,495,260	68	45	23.79	73,018	1	42	12.00	500
72	Michigan	10	848	208,344	17	45	22.85	17,663	1	50	10.00	500
73	Minnesota	3	129	46,356	5	46	37.62	8,700				
74	Missouri	7	125	34,477	5	43	22.50	4,876				
75	New Hampshire	37	3,178	989,130	37	43	27.50	43,456	1	46	21.82	1,000
76	New Jersey	15	1,277	342,600	18	43	31.41	24,310	1	25	6.24	156
77	New York	201	20,299	6,437,308	275	45	28.88	353,547	12	44	12.47	6,652
78	North Carolina	5	184	30,410	5	48	13.03	3,150				
79	Ohio	44	1,898	466,630	45	47	24.52	51,700	2	40	21.09	1,670
80	Pennsylvania	236	15,941	4,732,754	267	43	24.83	286,428	11	36	10.44	4,165
81	Rhode Island	16	1,538	487,350	18	45	29.73	24,034				
82	Utah	5	70	17,020	5	39	15.68	3,070				
83	Vermont	10	718	269,844	8	44	28.29	9,900				
84	Wisconsin	23	2,296	449,724	27	46	32.33	40,080	1	25	10.40	260
85	All other states (a)	14	439	147,490	14	38	21.79	11,530				

a Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: California, 2; Colorado, 2; Florida, 1; Kansas, 1; Kentucky, 2; Nebraska, 1; Virginia, 2; Washington, 1; West Virginia, 2.

OF WOOL MANUFACTURE, BY STATES AND TERRITORIES: 1890—Continued.

AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS—continued.

Clerks.								Operatives and skilled.								
Males above 16 years.				Females above 15 years.				Males above 16 years.				Females above 15 years.				
Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	
561	45	$19.29	$492,098	67	45	$8.89	$26,770	10,882	45	$9.28	$4,575,452	15,040	46	$5.63	$3,863,222	61
1	50	6.00	300					21	50	8.19	8,596	129	50	4.36	28,116	62
28	48	19.40	25,864	3	50	7.80	1,170	782	48	9.63	360,720	573	48	5.88	162,313	63
4	50	8.50	1,700					28	48	8.41	11,319	111	50	5.17	28,551	64
20	48	18.57	17,799	2	46	11.89	1,090	260	47	9.33	113,075	888	48	5.43	230,803	65
5	42	17.86	3,721	1	50	6.00	300	96	49	8.93	42,177	133	49	4.01	26,150	66
								1	50	14.40	720	6	33	5.05	1,010	67
								19	41	10.16	7,876	158	38	5.02	29,750	68
								5	41	4.12	850	82	48	2.57	10,125	69
5	50	18.80	4,700					17	49	8.89	7,392	17	50	2.39	2,028	70
34	49	14.92	25,086	10	49	8.19	4,026	710	48	9.37	319,439	626	47	6.58	194,044	71
15	48	22.44	16,272					110	47	8.01	41,612	269	48	5.52	71,962	72
5	40	33.28	6,656					13	44	9.50	5,482	72	50	5.00	18,000	73
1	50	14.40	720	2	50	5.92	592	1	50	5.28	264	94	45	5.54	23,250	74
17	45	16.55	12,532	2	42	7.48	623	663	46	8.76	265,039	614	47	6.38	184.503	75
8	42	16.66	5.570					332	43	7.77	111,672	249	45	4.99	56,411	76
174	44	19.32	148,318	10	34	9.48	3,222	5,028	44	8.77	1,956,388	4,686	46	5.74	1,218,193	77
								12	47	8.06	4,500	35	47	4.85	8.000	78
16	50	16.80	13,440	4	50	6.62	1,324	91	47	11.84	50,849	702	48	4.22	141.352	79
182	45	20.61	167,840	28	44	9.81	12,022	1,867	44	10.94	905,371	4,098	43	5.85	1,033,887	80
15	50	12.36	9,221	1	50	8.32	416	231	49	9.59	107,747	435	49	5.85	125,038	81
												60	48	4.57	13,200	82
5	48	15.97	3,859					230	47	9.34	100,995	292	47	6.81	92,555	83
26	44	24.69	28,500	3	42	13.92	1,740	256	48	8.62	106,411	531	48	4.34	110,977	84
				1	50	4.90	245	109	46	9.41	46,958	200	44	5.98	53,004	85

TABLE 12.—CLASSIFICATION OF EMPLOYÉS AND WAGES IN EACH CLASS

	CLASSES BY STATES AND TERRITORIES.	AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS—continued.									
		Operatives and skilled—Continued.				Unskilled.					
		Children.				Males above 16 years.				Females above 15 years.	
		Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.
61	Hosiery and knitting mills..	2,664	45	$3.05	$367,395	799	46	$8.70	$317,387	85	48
62	Alabama	250	50	1.94	24,300	1	50	6.00	300	.....	.....
63	Connecticut	84	47	3.20	12,707	45	49	10.01	22,071	2	50
64	Georgia	46	49	2.32	5,265	5	45	6.17	1,375	.....	.....
65	Illinois	42	48	3.50	7,000	19	49	7.85	7,322	30	49
66	Indiana	21	49	2.13	2,200	15	48	6.39	4,580	.....	.....
67	Iowa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
68	Louisiana	.....	.....	.....	.....	1	38	9.60	360	.....	.....
69	Maine	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
70	Maryland	.....	.....	.....	.....	3	50	10.00	1,500	.....	.....
71	Massachusetts	86	49	3.16	13,239	49	49	7.87	18,801	4	47
72	Michigan	1	42	2.40	100	13	49	6.60	4,206	.....	.....
73	Minnesota	.....	.....	.....	.....	4	42	8.39	1,415	.....	.....
74	Missouri	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
75	New Hampshire	56	50	3.36	9,406	39	47	9.12	16,859	.....	.....
76	New Jersey	117	46	3.92	21,129	13	42	10.85	5,935	.....	.....
77	New York	673	45	3.13	95,483	321	43	8.50	117,948	16	45
78	North Carolina	31	50	2.90	4,500	3	50	5.33	800	.....	.....
79	Ohio	42	50	3.08	6,478	16	49	8.42	6,662	1	13
80	Pennsylvania	1,092	42	3.25	149,507	191	46	9.46	83,968	23	49
81	Rhode Island	48	49	2.63	6,191	19	50	8.99	8,521	.....	.....
82	Utah	5	50	3.00	750	.....	.....	.....	.....	.....	.....
83	Vermont	5	43	4.52	980	23	43	8.37	8,339	.....	.....
84	Wisconsin	65	48	2.61	8,160	17	48	6.96	5,725	9	50
85	All other states	.....	.....	.....	.....	2	50	7.00	700	.....	.....

OF WOOL MANUFACTURE, BY STATES AND TERRITORIES: 1890—Continued.

AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS—continued. Unskilled—Continued.						PIECEWORKERS—AVERAGE NUMBER EMPLOYED AND TOTAL WAGES.							
Females above 15 years—Continued		Children.				Summary.		Males above 16 years.		Females above 15 years.		Children.	
Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Wages.	Number.	Wages.	Number.	Wages.	Number.	Wages.
$4.63	$18,840	47	47	$3.07	$6,733	30,071	$7,429,090	3,165	$1,148,361	25,701	$6,124,008	1,205	$156,721
						8	1,498			8	1,498		
6.00	600	2	50	3.00	300	1,571	408,590	94	37,739	1,456	365,998	21	4,853
						148	17,582	10	1,500	110	13,880	28	2,202
5.07	7,440	3	50	3.00	450	562	100,718			561	100,694	1	24
		1	42	2.40	100	669	102,591	176	28,000	460	70,991	39	3,600
						100	4,705			100	4,705		
						170	17,240			170	17,240		
						252	33,646	2	450	185	27,476	65	5,720
3.57	676					3,087	846,431	266	102,552	2,777	735,949	44	7,930
						422	56,029	8	1,780	414	54,249		
						30	6,103			30	6,103		
						22	4,775			22	4,775		
						1,749	455,712	306	108,346	1,423	345,531	20	1,835
						539	117,417	28	9,341	511	108,076		
4.04	2,894	11	44	3.49	1,706	9,113	2,532,963	1,064	394,202	7,908	2,114,677	141	24,084
						98	9,460	4	560	70	7,460	24	1,500
4.80	60					979	193,095			946	188,463	33	4,632
5.14	5,820	30	47	2.96	4,183	8,152	2,079,563	1,101	402,593	6,403	1,594,495	648	82,475
						771	206,182	82	51,900	588	138,916	101	15,366
						155	53,216	9	2,764	146	50,452		
3.00	1,350					1,361	146,521	9	1,694	1,312	142,327	40	2,500
						113	35,053	12	5,000	101	30,353		

TABLE 13.—AVERAGE NUMBER OF EMPLOYÉS AT THE DIFFERENT WEEKLY RATES OF

	STATES AND TERRITORIES.	Number of establishments.	AGGREGATES.		WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK. (a)			
					Males above 16 years.			
			Average number.	Total wages.	Total number.	Under $5.	$5 and over but under $6.	$6 and over but under $7.
1	The United States	2,489	219,132	$76,660,742	89,577	7,635	5,478	11,528
2	Alabama	9	428	67,963	36	9	7	5
3	Arkansas	6	31	6,231	16	1	.....	6
4	California	10	1,375	328,824	925	5	156	328
5	Connecticut	98	13,047	4,940,783	6,557	412	321	793
6	Delaware	3	297	103,395	94	2	5	15
7	Georgia	18	528	104,353	125	21	7	25
8	Illinois	58	2,792	858,889	816	105	69	91
9	Indiana	55	3,109	817,387	1,030	212	58	119
10	Iowa	17	387	135,790	186	9	13	13
11	Kentucky	44	2,042	615,055	910	279	78	89
12	Louisiana	4	286	52,517	28	1	9	3
13	Maine	82	5,453	1,991,676	3,148	153	89	466
14	Maryland	17	689	185,397	234	5	17	16
15	Massachusetts	293	43,038	16,154,034	21,176	2,053	1,250	3,152
16	Michigan	43	1,428	390,147	475	79	29	73
17	Minnesota	24	470	167,323	219	14	21	39
18	Mississippi	7	1,082	306,270	402	16	14	240
19	Missouri	42	635	156,887	261	13	6	43
20	New Hampshire	89	9,400	3,341,695	4,006	162	197	475
21	New Jersey	50	7,248	2,416,371	3,222	439	129	721
22	New York	339	37,992	13,033,301	13,037	1,174	857	1,586
23	North Carolina	32	508	95,739	186	85	25	21
24	Ohio	113	3,329	915,656	822	137	54	99
25	Oregon	6	402	175,313	208	1	17	22
26	Pennsylvania	703	55,354	19,764,386	19,172	1,275	312	1,264
27	Rhode Island	85	19,325	7,049,109	8,978	445	507	1,297
28	Tennessee	49	998	239,657	425	127	29	124
29	Texas	4	359	138,795	130	2	15	8
30	Utah	14	344	121,176	170	4	17	12
31	Vermont	39	2,303	895,284	1,203	62	76	209
32	Virginia	37	612	166,798	347	93	56	69
33	West Virginia	32	307	67,380	169	36	19	35
34	Wisconsin	56	3,383	810,463	827	201	19	65
35	All other states (b)	11	151	46,098	37	3	.....	5

a In comparing the table of weekly rates and the number of employés at each rate with the average weekly earnings presented in Table 11 it must be remembered that it is not practicable to obtain true average weekly earnings from the table of weekly rates, because the term of employment varies for employés at the respective rates.

PAY IN ALL CLASSES OF WOOL MANUFACTURE, BY STATES AND TERRITORIES: 1890.

WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK—continued.

Males above 16 years—Continued.								Females above 15 years.		
$7 and over but under $8.	$8 and over but under $9.	$9 and over but under $10.	$10 and over but under $12.	$12 and over but under $15.	$15 and over but under $20.	$20 and over but under $25.	$25 and over.	Total number.	Under $5.	
13,437	10,594	11,011	11,329	8,584	5,483	2,197	2,301	70,361	19,107	1
1	.....	3	6	3	1	1	.....	133	118	2
.....	.....	1	4	2	2	.....	.....	12	10	3
70	39	60	71	59	79	28	30	363	38	4
1,320	765	921	780	576	333	169	167	3,680	773	5
22	5	12	13	6	9	3	2	39	23	6
26	10	2	5	10	7	11	1	166	55	7
66	55	84	108	100	65	28	45	1,303	448	8
151	46	112	103	81	66	45	37	915	666	9
26	17	26	16	25	24	11	6	161	79	10
87	49	47	77	67	67	22	48	732	174	11
1	.....	1	2	.....	4	1	6	158	.....	12
530	554	542	356	195	152	60	51	1,666	416	13
133	7	16	10	9	5	8	8	135	21	14
3,613	2,483	2,786	2,181	1,832	1,040	405	381	14,226	3,858	15
57	48	27	63	37	25	24	13	461	177	16
25	4	34	17	21	22	10	12	149	72	17
22	14	33	14	16	13	6	14	384	112	18
84	24	12	24	25	15	8	7	266	47	19
772	718	632	480	221	186	59	104	3,310	455	20
415	415	252	251	257	191	83	69	2,783	1,057	21
2,100	1,007	1,399	2,222	1,153	730	396	413	11,538	2,933	22
2	3	4	15	20	7	1	3	147	107	23
72	56	66	71	96	64	40	67	1,120	624	24
7	15	28	33	28	21	11	25	31	6	25
2,017	2,324	2,352	3,078	2,832	1,686	531	501	16,931	3,869	26
1,350	1,650	1,277	1,052	666	415	135	184	6,634	1,419	27
27	9	16	16	20	35	9	13	417	339	28
8	13	15	27	11	20	7	4	156	50	29
16	21	17	35	16	15	7	10	155	51	30
272	137	108	107	90	78	40	24	867	231	31
30	19	20	16	19	20	2	3	221	145	32
21	3	7	14	18	15	1	.....	96	60	33
94	79	89	57	71	67	32	53	959	645	34
.....	5	10	5	2	4	3	.....	47	29	35

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Colorado, 2; Florida, 1; Idaho, 1; Kansas, 2; Nebraska, 1; South Carolina, 1; South Dakota, 2; Washington, 1.

TABLE 13.—AVERAGE NUMBER OF EMPLOYÉS AT THE DIFFERENT WEEKLY RATES OF PAY

	STATES AND TERRITORIES.	WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK—cont'd.						
		Females above 15 years—Continued.						
		$5 and over but under $6.	$6 and over but under $7.	$7 and over but under $8.	$8 and over but under $9.	$9 and over but under $10.	$10 and over but under $12.	$12 and over but under $15.
1	The United States	17,098	14,739	8,583	5,563	2,864	1,991	305
2	Alabama	3		5	7			
3	Arkansas		2					
4	California	146	48	48	33	34	9	2
5	Connecticut	728	672	756	420	215	99	12
6	Delaware	3	11					2
7	Georgia	65	21	25				
8	Illinois	331	348	92	40	32	8	1
9	Indiana	118	68	40	9	10	3	
10	Iowa	16	47	10	4	5		
11	Kentucky	512	30	9	2	3	2	
12	Louisiana	158						
13	Maine	310	383	317	110	92	36	1
14	Maryland	16	35	63				
15	Massachusetts	2,912	2,909	2,207	1,211	594	426	86
16	Michigan	110	130	13	14	7	10	
17	Minnesota	36	23	14	2	1		1
18	Mississippi	152	120					
19	Missouri	203	5	1	9		1	
20	New Hampshire	626	1,430	500	142	93	52	11
21	New Jersey	1,052	236	249	135	22	31	
22	New York	3,790	2,113	1,216	860	276	257	74
23	North Carolina	8	24	1	1	3	3	
24	Ohio	343	65	49	3		18	1
25	Oregon	1	5	14	4	1		
26	Pennsylvania	3,189	4,471	2,068	1,462	934	837	86
27	Rhode Island	1,918	1,028	661	1,014	433	138	18
28	Tennessee	34	17	17	6	2		1
29	Texas	40	48	8	5		5	
30	Utah	37	44	14	2	3	2	2
31	Vermont	88	243	121	42	86	40	4
32	Virginia	43	22	11				
33	West Virginia	17	12	1	6			
34	Wisconsin	83	122	53	20	18	13	3
35	All other states	10	7				1	

IN ALL CLASSES OF WOOL MANUFACTURE, BY STATES AND TERRITORIES: 1890—Continued.

WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK—continued.								PIECEWORKERS.		
Females above 15 years—Continued.			Children.							
$15 and over but under $20.	$20 and over but under $25.	$25 and over.	Total number.	Under $5.	$5 and over but under $6.	$6 and over but under $7.	$7 and over but under $8.	Average number.	Total wages.	
90	17	4	12,948	12,563	333	42	10	46.246	$13,208,577	1
			250	250				9	$1,678	2
			3	3						3
5			24	19	5			63	19,661	4
5			526	509	17			2,284	630,082	5
			39	39				125	44,528	6
			71	71				166	19,967	7
2	1		69	69				604	110,376	8
	1		132	132				1,032	185,756	9
			16	16				24	6,276	10
			178	178				222	58,144	11
								100	4,705	12
		1	150	142	6	2		489	139,985	13
			68	68				252	33,646	14
23			1,689	1,595	63	31		5,947	1,915,203	15
			30	30				462	69,125	16
			1	1				101	29,453	17
			224	224				72	23,032	18
			59	59				49	10,274	19
	1		225	188	37			1,859	488,636	20
		1	290	278	12			953	236,146	21
14	5		1,952	1,876	70	2	4	11,465	3,329,354	22
			60	57		1	2	115	10,965	23
15	2		196	188	8			1,191	256,763	24
			23	21			2	140	54,865	25
10	3	2	4,597	4,506	87	2	2	14,654	4,673,486	26
3	2		1,742	1,719	21	2		1,971	558,506	27
1			116	109	5	2		40	3,475	28
			41	41				32	18,150	29
			19	19						30
12			41	39	2			192	66,199	31
			30	30				14	2,065	32
			11	11				31	5,178	33
	2		72	72				1,525	181,765	34
			4	4				63	21,133	35

TABLE 14.—AVERAGE NUMBER OF EMPLOYÉS AT THE DIFFERENT WEEKLY RATES OF

	CLASSES BY STATES AND TERRITORIES.	Number of establishments.	AGGREGATES.		WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK. (a)			
					Males above 16 years.			
			Average number.	Total wages.	Total number.	Under $5.	$5 and over but under $6.	$6 and over but under $7.
1	Woolen mills	1,311	79,351	$28,478,931	42,705	3,700	2,652	6,734
2	Alabama	6	16	3,125	11	.....	4	2
3	Arkansas	6	31	6,231	16	1	.....	6
4	Californuis	8	1,264	287,658	914	5	156	328
5	Connecticut	55	5,173	2,035,462	3,223	206	178	539
6	Delaware	3	297	103,395	94	2	5	15
7	Georgia	14	179	32,401	81	18	5	16
8	Illinois	23	914	313,780	467	66	18	82
9	Indiana	45	2,103	600,062	873	182	55	99
10	Iowa	14	378	133,240	183	8	13	13
11	Kentucky	40	1,803	554,544	792	264	76	86
12	Maine	75	4,323	1,629,888	2,683	146	88	378
13	Maryland	9	383	123,931	197	4	13	12
14	Massachusetts	165	19,813	7,586,575	11,860	813	767	1,833
15	Michigan	32	518	156,128	282	54	14	52
16	Minnesota	21	341	120,967	192	12	20	36
17	Mississippi	7	1,082	306,270	402	16	14	240
18	Missouri	35	510	122,410	254	13	5	43
19	New Hampshire	46	4,189	1,643,168	2,455	98	118	300
20	New Jersey	21	4,228	1,481,315	2,052	231	26	605
21	New York	91	2,969	1,046,778	1,484	154	59	202
22	North Carolina	27	324	65,329	166	82	23	13
23	Ohio	64	1,032	294,365	507	105	41	77
24	Oregon	6	402	175,313	208	1	17	22
25	Pennsylvania	264	16,061	5,729,982	7,442	653	606	709
26	Rhode Island	40	6,028	2,297,416	3,296	173	155	565
27	Tennessee	49	998	239,657	425	127	29	124
28	Texas	4	359	138,795	130	2	15	8
29	Utah	9	274	104,156	165	4	17	12
30	Vermont	29	1,585	625,440	937	46	36	188
31	Virginia	35	444	117,023	284	90	46	61
32	West Virginia	30	287	61,919	162	36	19	34
33	Wisconsin	32	982	324,772	446	85	14	33
34	All other states (b)	6	61	17,436	28	3	.....	1
35	Worsted mills	143	43,593	15,880,183	18,549	1,384	1,088	2,070
36	Connecticut	10	2,261	875,372	1,267	34	57	112
37	Massachusetts	33	12,021	4,556,997	5,321	627	257	733
38	New Hampshire	4	1,963	678,552	750	10	31	76
39	New Jersey	6	954	284,102	335	78	22	11
40	New York	16	3,953	1,481,194	1,598	174	175	173
41	Pennsylvania	41	9,453	3,350,113	3,319	160	226	171
42	Rhode Island	28	11,757	4,263,968	5,403	256	318	700
43	All other states (b)	5	1,231	389,885	556	45	2	94
44	Carpet mills (other than rag)	173	29,121	11,633,116	11,998	990	624	808
45	Massachusetts	7	5,144	1,892,072	2,291	491	136	367
46	New Jersey	6	585	212,554	297	36	12	20
47	New York	15	8,954	3,345,165	3,268	197	141	93
48	Pennsylvania	142	12,674	5,509,805	5,322	162	323	79
49	All other states (b)	3	1,764	673,520	820	104	12	49
50	Felt mills	34	2,266	1,041,296	1,476	83	36	145
51	Massachusetts	7	340	140,528	298	25	5	47
52	New York	11	820	361,944	498	15	9	39
53	Ohio	4	183	92,161	124	19	6	1
54	Pennsylvania	3	176	111,682	83	.....	2	3
55	All other states (b)	9	747	334,981	473	24	14	55
56	Wool hat mills	32	3,592	1,363,944	1,648	234	118	206
57	Massachusetts	7	1,045	482,602	545	29	29	75
58	New York	5	997	361,512	391	62	17	23
59	Pennsylvania	17	1,049	330,050	499	126	66	87
60	All other states (b)	3	501	189,780	213	17	6	21

a In comparing the table of weekly rates and the number of employés at each rate with the average weekly earnings presented in Table 12 it must be remembered that it is not practicable to obtain true average weekly earnings from the table of weekly rates, because the term of employment varies for employés at the respective rates.

PAY IN EACH CLASS OF WOOL MANUFACTURE, BY STATES AND TERRITORIES: 1890.

WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK—continued.

Males above 16 years—Continued.								Females above 15 years.		
$7 and over but under $8.	$8 and over but under $9.	$9 and over but under $10.	$10 and over but under $12.	$12 and over but under $15.	$15 and over but under $20.	$20 and over but under $25.	$25 and over.	Total number.	Under $5.	
7,039	5,285	5,168	4,488	3,497	2,389	892	861	25,753	7,598	1
		2	1	2				4	4	2
		1	4	2	2			12	10	3
67	38	60	68	59	79	28	26	303	25	4
591	442	461	308	233	145	63	57	1,680	376	5
22	5	12	13	6	9	3	2	39	23	6
17	2	2	3	8	4	5	1	55	22	7
42	44	40	82	33	34	16	10	381	191	8
116	42	109	90	67	49	34	30	759	546	9
26	17	26	16	23	24	11	6	155	75	10
82	35	38	52	44	60	21	34	639	97	11
443	389	472	342	183	143	56	43	1,339	330	12
131	6	10	8	7	2	4		118	4	13
2,130	1,643	1,575	1,342	862	521	215	159	6,018	1,552	14
37	12	18	51	19	16	7	2	173	88	15
24	4	34	15	13	21	7	6	77	52	16
22	14	33	14	16	13	6	14	384	112	17
84	24	12	23	23	15	6	6	170	41	18
553	331	420	274	153	106	31	71	1,480	247	19
249	254	153	144	195	108	42	45	1,964	578	20
239	125	283	124	131	98	36	33	985	368	21
2	3	4	14	19	2	1	3	112	93	22
45	36	41	43	51	35	14	19	360	195	23
7	15	28	33	28	21	11	25	31	6	24
1,048	1,121	778	783	896	562	151	135	4,798	1,128	25
696	471	347	412	227	124	54	66	1,873	440	26
27	9	16	16	20	35	9	13	417	339	27
8	13	15	27	11	20	7	4	156	50	28
16	20	17	35	16	11	7	10	95	26	29
218	103	86	82	68	65	27	18	575	194	30
20	9	12	9	16	16	2	3	116	100	31
19	2	7	14	17	13	1		83	48	32
57	51	46	45	47	33	15	20	373	220	33
1	5	10	1	2	3	2		29	18	34
2,654	2,801	2,818	2,393	1,580	1,008	340	413	17,755	4,649	35
264	147	212	255	94	53	19	20	662	118	36
1,108	465	708	456	538	217	83	129	5,073	1,177	37
71	336	78	116	14	11	1	6	1,188	153	38
15	26	35	71	22	38	13	4	503	320	39
215	106	174	210	168	101	56	46	1,542	660	40
265	389	642	667	307	316	97	79	4,108	1,191	41
630	1,150	894	599	421	261	67	107	4,325	901	42
86	182	75	19	16	11	4	22	353	129	43
1,654	1,067	1,028	2,842	1,859	652	249	225	10,751	1,680	44
129	270	200	193	272	139	60	34	2,264	946	45
99	67	26	14	5	8	5	5	51	37	46
650	197	128	1,338	254	62	43	65	4,123	382	47
519	493	617	1,216	1,185	410	131	87	3,711	218	48
257	40	57	81	143	33	10	34	602	97	49
259	192	201	181	152	75	66	86	350	130	50
88	26	40	31	19	7	5	5	34	27	51
71	76	113	51	48	35	17	24	139	42	52
10	7	17	20	25	5	1	13	39	12	53
		7	18	18	4	6	25	5	2	54
90	83	24	61	42	24	37	19	133	47	55
200	118	253	156	129	128	45	61	526	226	56
63	24	119	65	36	69	14	22	196	56	57
67	28	68	14	45	35	6	26	44	32	58
47	39	35	37	34	9	16	3	149	98	59
23	27	31	40	14	15	9	10	137	40	60

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Woolen goods, Idaho, 1; Kansas, 1; Louisiana, 1; South Carolina, 1; South Dakota, 2. Worsted goods, Kentucky, 2; Maine, 1; Ohio, 1; Wisconsin, 1. Carpets, Connecticut, 2; Rhode Island, 1. Felt goods, Connecticut, 2; Indiana, 1; Maine, 1; Michigan, 1; New Hampshire, 2; New Jersey, 2. Wool hats, Connecticut, 2; Maine, 1.

TABLE 14.—AVERAGE NUMBER OF EMPLOYÉS AT THE DIFFERENT WEEKLY RATES OF PAY

	CLASSES BY STATES AND TERRITORIES.	WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK—cont'd.						
		Females above 15 years—Continued.						
		$5 and over but under $6.	$6 and over but under $7.	$7 and over but under $8.	$8 and over but under $9.	$9 and over but under $10.	$10 and over but under $12.	$12 and over but under $15.
1	Woolen mills	5,332	5,093	3,937	2,126	1,979	453	108
2	Alabama							
3	Arkansas		2					
4	California	136	38	38	28	29	7	
5	Connecticut	267	277	236	318	151	48	4
6	Delaware	3	11					2
7	Georgia	33						
8	Illinois	59	66	31	15	17	2	
9	Indiana	94	59	37	9	10	3	
10	Iowa	15	47	9	4	5		
11	Kentucky	512	15	8	2	3	2	
12	Maine	240	275	269	98	91	34	1
13	Maryland	16	35	63				
14	Massachusetts	953	1,922	1,247	720	315	155	48
15	Michigan	30	35	3	8	4	5	
16	Minnesota	21	3					1
17	Mississippi	152	120					
18	Missouri	115	4	1	8		1	
19	New Hampshire	233	496	302	105	61	28	8
20	New Jersey	796	171	235	131	22	30	
21	New York	212	175	149	56	22	5	
22	North Carolina	2	9	1	1	3	3	
23	Ohio	67	53	44	1			
24	Oregon	1	5	14	4	1		
25	Pennsylvania	865	1,477	780	347	123	42	34
26	Rhode Island	265	431	325	297	143	57	5
27	Tennessee	34	17	17	6	2		1
28	Texas	49	48	8	5		5	
29	Utah	22	24	14	2	3	2	2
30	Vermont	64	148	63	26	56	16	
31	Virginia	13	2	1				
32	West Virginia	17	11	1	6			
33	Wisconsin	45	17	44	19	18	7	2
34	All other states	10					1	
35	Worsted mills	4,624	4,108	1,664	1,525	679	424	79
36	Connecticut	191	111	121	51	37	33	
37	Massachusetts	1,275	1,343	819	295	81	59	23
38	New Hampshire	283	697	22	1	11	21	
39	New Jersey	156	16	7	4			
40	New York	137	436	53	86	64	61	37
41	Pennsylvania	1,070	893	390	284	193	173	3
42	Rhode Island	1,442	512	307	794	284	77	7
43	All other states	70	190	44	10			
44	Carpet mills (other than rag)	3,344	1,665	1,593	1,198	643	752	51
45	Massachusetts	472	342	76	113	111	194	8
46	New Jersey	12	2					
47	New York	2,314	442	521	390	73	1	
48	Pennsylvania	482	782	598	583	450	552	43
49	All other states	64	97	308	22	9	5	
50	Felt mills	56	128	33	2			1
51	Massachusetts	7						
52	New York	3	69	24				1
53	Ohio	25	1	1				
54	Pennsylvania	3						
55	All other states	18	58	8	2			
56	Wool hat mills	111	84	26	34	26	13	4
57	Massachusetts	38	43	6	31	7	9	4
58	New York	2	2	1		5	2	
59	Pennsylvania	27	10	4		10		
60	All other states	44	29	15	3	4	2	

IN EACH CLASS OF WOOL MANUFACTURE, BY STATES AND TERRITORIES: 1890—Continued.

WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK—continued.								PIECEWORKERS.		
Females above 15 years—Continued.			Children.							
$15 and over but under $20.	$20 and over but under $25.	$25 and over.	Total number.	Under $5.	$5 and over but under $6.	$6 and over but under $7.	$7 and over but under $8.	Average number.	Total wages.	
23	2	2	4,367	4,202	138	17	10	6,526	$2,042,091	1
								1	180	2
			3	3						3
2			24	19	5			23	7,241	4
3			141	128	13			129	41,246	5
			39	39				125	44,528	6
			25	25				18	2,385	7
			24	24				42	9,658	8
	1		108	108				363	83,165	9
			16	16				24	6,276	10
			178	178				194	50,404	11
		1	88	80	6	2		213	71,551	12
			68	68						13
6			707	678	20	9		1,228	401,340	14
			29	29				34	11,246	15
			1	1				71	23,350	16
			224	224				72	23,032	17
			59	59				27	5,499	18
			154	134	20			100	31,724	19
		1	78	66	12			134	25,079	20
1			191	177	9	1	4	309	95,198	21
			29	26		1	2	17	1,505	22
			60	52	8			105	27,468	23
			23	21			2	140	54,865	24
2			1,490	1,469	19		2	2,331	793,261	25
			349	326	21	2		516	158,166	26
1			116	109	5	2		40	3,475	27
			41	41				32	18,150	28
			14	14						29
8			36	36				37	12,983	30
			30	30				14	2,065	31
			11	11				31	5,178	32
	1		7	7				156	31,873	33
			4	4						34
20		1	3,791	3,653	116	22		3,498	1,326,490	35
			152	148	4			180	49,444	36
10			716	659	35	22		911	373,115	37
			15	15				10	1,200	38
			78	78				38	20,780	39
9			285	253	32			527	176,913	40
		1	1,057	1,012	45			969	442,419	41
1			1,345	1,345				684	194,158	42
			143	143				179	68,461	43
5			1,806	1,792	14			4,566	1,795,754	44
2			137	137				452	163,867	45
								237	65,370	46
			716	706	10			847	312,070	47
3			811	807	4			2,830	1,200,419	48
			142	142				200	54,028	49
			123	122	1			317	120,277	50
			8	8						51
			40	39	1			143	50,080	52
			13	13				7	1,200	53
			38	38				50	20,874	54
			24	24				117	48,123	55
2			150	145	5			1,268	494,875	56
2			35	30	5			269	130,450	57
			36	36				526	162,130	58
			79	79				322	136,950	59
								151	65,345	60

TABLE 14.—AVERAGE NUMBER OF EMPLOYÉS AT THE DIFFERENT WEEKLY RATES OF PAY

	CLASSES BY STATES AND TERRITORIES.	Number of establishments.	AGGREGATES.		WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK.			
					Males above 16 years.			
			Average number.	Total wages.	Total number.	Under $5.	$5 and over but under $6.	$6 and over but under $7.
61	Hosiery and knitting mills	796	61,209	$18,263,272	13,201	1,244	960	1,565
62	Alabama	3	412	64,838	25	9	3	3
63	Connecticut	27	3,134	1,673,135	899	47	66	58
64	Georgia	4	349	71,952	44	3	2	9
65	Illinois	35	1,878	545,109	349	39	51	9
66	Indiana	9	962	207,519	137	26	2	9
67	Iowa	3	9	2,550	3	1		
68	Louisiana	3	284	51,841	26	1	9	2
69	Maine	4	260	30,165	6	3	1	1
70	Maryland	8	306	61,466	37	1	4	4
71	Massachusetts	74	4,675	1,495,260	861	68	56	97
72	Michigan	10	848	208,344	155	23	14	16
73	Minnesota	3	129	46,356	27	2	1	3
74	Missouri	7	125	34,477	7		1	
75	New Hampshire	37	3,178	989,130	756	54	47	97
76	New Jersey	15	1,277	342,600	371	84	60	73
77	New York	201	20,299	6,437,308	5,798	572	456	956
78	North Carolina	5	184	30,410	20	3	2	8
79	Ohio	44	1,898	466,630	168	12	7	20
80	Pennsylvania	236	15,941	4,732,754	2,507	174	89	115
81	Rhode Island	16	1,538	487,350	283	16	34	31
82	Utah	5	70	17,020	5			
83	Vermont	10	718	269,844	266	16	40	21
84	Wisconsin	23	2,296	449,724	326	87	5	19
85	All other states (a)	14	439	147,490	125	3	10	14

a Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: California, 2; Colorado, 2; Florida, 1; Kansas, 1; Kentucky, 2; Nebraska, 1; Virginia, 2; Washington, 1; West Virginia, 2.

IN EACH CLASS OF WOOL MANUFACTURE, BY STATES AND TERRITORIES: 1890—Continued.

WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK—continued.

Males above 16 years—Continued.								Females above 15 years.		
$7 and over but under $8.	$8 and over but under $9.	$9 and over but under $10.	$10 and over but under $12.	$12 and over but under $15.	$15 and over but under $20.	$20 and over but under $25.	$25 and over.	Total number.	Under $5.	
1,631	1,131	1,543	1,269	1,367	1,231	605	655	15,226	4,824	61
1		1	5	1	1	1		129	114	62
131	90	160	83	92	96	42	40	578	143	63
9	8		2	2	3	6		111	33	64
24	11	44	26	67	31	12	35	922	257	65
34	4	3	12	14	15	11	7	134	102	66
				2				6	4	67
		1	2		4	1	6	158		68
							1	84	80	69
2	1	6	2	2	3	4	8	17	17	70
95	55	144	94	105	87	28	32	641	100	71
14	36	4	6	7	8	17	10	270	77	72
1			2	8	1	3	6	72	20	73
			1	2		2	1	96	6	74
142	48	133	73	48	63	25	26	617	43	75
41	9	28	6	19	27	15	9	250	122	76
858	475	633	485	507	399	238	219	4,704	1,449	77
			1	1	5			35	14	78
12	9	5	6	18	23	25	31	709	407	79
138	282	273	357	392	385	130	172	4,160	1,232	80
24	29	36	41	17	30	14	11	436	78	81
	1				4			60	25	82
54	34	22	25	22	13	13	6	292	37	83
36	27	42	11	22	32	17	28	544	383	84
15	12	8	29	19	7	1	7	201	81	85

TABLE 14.—AVERAGE NUMBER OF EMPLOYÉS AT THE DIFFERENT WEEKLY RATES OF PAY

	CLASSES BY STATES AND TERRITORIES.	WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK—continued.						
		Females above 15 years—Continued.						
		$5 and over but under $6.	$6 and over but under $7.	$7 and over but under $8.	$8 and over but under $9.	$9 and over but under $10.	$10 and over but under $12.	$12 and over but under $15.
61	Hosiery and knitting mills	3,631	3,661	1,420	768	446	349	71
62	Alabama	3		5	7			
63	Connecticut	156	146	71	26	15	11	8
64	Georgia	32	21	25				
65	Illinois	272	282	61	25	15	6	1
66	Indiana	24	5	3				
67	Iowa	1		1				
68	Louisiana	158						
69	Maine			2			2	
70	Maryland							
71	Massachusetts	167	159	68	52	80	9	3
72	Michigan	79	90	10	6	3	5	
73	Minnesota	15	20	4	2	1		
74	Missouri	88	1		1			
75	New Hampshire	100	234	176	36	21	3	3
76	New Jersey	87	33	7			1	
77	New York	1,122	989	471	328	112	188	36
78	North Carolina	6	15					
79	Ohio	251	9	4	2		18	1
80	Pennsylvania	742	1,309	386	248	158	70	6
81	Rhode Island	211	85	29	13	6	4	6
82	Utah	15	20					
83	Vermont	24	95	58	16	30	24	4
84	Wisconsin	38	105	9	1		6	1
85	All other states	40	43	20	5	5	2	2

IN EACH CLASS OF WOOL MANUFACTURE, BY STATES AND TERRITORIES: 1890—Continued.

WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK—continued.								PIECEWORKERS.		
Females above 15 years—Continued.			Children.							
$15 and over but under $20.	$20 and over but under $25.	$25 and over.	Total number.	Under $5.	$5 and over but under $6.	$6 and over but under $7.	$7 and over but under $8.	Average number.	Total wages.	
40	15	1	2,711	2,649	59	3	.....	30,071	$7,423,690	61
.....	.....	.....	250	250	.....	.....	.....	8	1,498	62
2	.....	.....	86	86	.....	.....	.....	1,571	408,536	63
.....	.....	.....	46	46	.....	.....	.....	148	17,582	64
2	1	.....	45	45	.....	.....	.....	562	100,718	65
.....	.....	.....	22	22	.....	.....	.....	669	102,591	66
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	67
.....	.....	.....	.....	.....	.....	.....	.....	100	4,705	68
.....	.....	.....	.....	.....	.....	.....	.....	170	17,240	69
.....	.....	.....	.....	.....	.....	.....	.....	252	33,646	70
3	.....	.....	86	83	3	.....	.....	3,087	846,431	71
.....	.....	.....	1	1	.....	.....	.....	422	56,629	72
.....	.....	.....	.....	.....	.....	.....	.....	30	6,103	73
.....	.....	.....	.....	.....	.....	.....	.....	22	4,775	74
.....	1	.....	56	39	17	.....	.....	1,749	455,712	75
.....	.....	.....	117	117	.....	.....	.....	539	117,417	76
4	5	.....	684	665	18	1	.....	9,113	2,532,963	77
.....	.....	.....	31	31	.....	.....	.....	98	9,460	78
15	2	.....	42	42	.....	.....	.....	979	193,095	79
5	3	1	1,122	1,101	19	2	.....	8,152	2,079,563	80
2	2	.....	48	48	.....	.....	.....	771	206,182	81
.....	.....	.....	5	5	.....	.....	.....	.....	.....	82
4	.....	.....	5	3	2	.....	.....	155	53,216	83
.....	1	.....	65	65	.....	.....	.....	1,361	146,521	84
3	.....	.....	.....	.....	.....	.....	.....	113	35,653	85

TABLE 15.—CUSTOM CARDING MILLS IN THE UNITED STATES, BY STATES: 1890.

NOTE.—In the preceding tables the data relating to custom carding mills are included with statistics of woolen mills.

STATES.	Number of establishments.	CAPITAL.				Miscellaneous expenses.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.					Cost of materials used.	Value of products.
		Value of hired property.	Direct investment.				Aggregates.		Males above 16 years.	Females above 15 years.	Children.		
			Total.	Land, buildings and machinery.	Live assets.		Average number.	Total wages.					
The United States	193	$18,065	$385,411	$348,207	$37,204	$13,802	416	$61,618	354	47	15	$332,650	$476,278
Alabama	5	400	6,825	6,750	75	123	7	1,465	7	.....	.....	3,489	5,180
Arkansas	3	.....	11,635	10,800	835	262	4	1,237	4	.....	.....	7,085	9,250
Georgia	3	.....	3,025	3,025	.....	129	5	600	5	.....	.....	5,173	7,200
Indiana	7	900	36,765	34,065	2,700	912	32	3,451	28	4	.....	17,280	23,738
Iowa	3	.....	4,700	4,700	.....	106	7	2,000	7	.....	.....	11,052	14,500
Kentucky	15	200	23,156	21,202	1,954	952	39	5,075	35	1	3	46,894	62,920
Maine	16	800	55,050	43,475	11,575	2,182	32	8,164	23	8	1	41,819	64,633
Michigan	10	4,750	18,295	16,170	2,125	888	26	4,186	19	4	3	19,931	29,109
Minnesota	6	1,000	11,475	11,125	350	1,166	23	3,950	19	4	.....	14,422	20,951
Mississippi	3	.....	3,200	3,200	.....	55	5	1,150	5	.....	.....	4,575	6,250
Missouri	12	1,900	21,799	18,495	3,304	1,007	23	2,003	18	3	2	14,819	21,530
New Hampshire	4	.....	5,925	5,725	200	315	9	1,240	7	1	1	8,443	12,200
New York	21	2,615	54,475	52,295	2,180	1,142	33	4,871	29	2	2	23,126	33,822
North Carolina	13	.....	10,810	10,580	230	397	23	2,071	19	3	1	12,240	17,911
Ohio	7	3,100	14,020	12,470	1,550	705	25	3,125	18	7	.....	7,397	11,763
Pennsylvania	14	1,300	25,233	21,035	4,198	877	21	2,843	20	1	.....	16,782	24,500
Tennessee	19	.....	17,953	17,055	898	467	33	4,366	30	3	.....	27,832	38,135
Vermont	7	500	8,585	7,810	775	795	9	1,650	8	1	.....	9,133	12,783
Virginia	5	.....	16,010	15,450	560	268	9	1,477	9	.....	.....	5,816	9,300
West Virginia	7	.....	10,190	8,500	1,690	88	15	1,450	15	.....	.....	9,943	13,770
Wisconsin	5	600	9,555	8,650	905	615	15	2,169	12	3	.....	6,035	9,305
All other states (a)	8	.....	16,730	15,630	1,100	351	21	3,075	17	2	2	19,364	27,528

a Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Illinois, 2; Maryland, 1; Massachusetts, 1; Oregon, 1; South Carolina, 1; Texas, 1; Utah, 1.

TABLE 16.—IDLE CAPITAL AND MACHINERY, BY STATES: 1890.

STATES.	Number of establishments.	CAPITAL.				MACHINERY.				
		Total.	Land.	Buildings.	Machinery, tools, and implements.	Sets of cards.	Combing machines.	Spindles.	Looms.	Knitting machines.
Total	267	$6,100,860	$841,916	$2,273,239	$2,985,705	612	35	172,634	a3,018	1,821
California	4	225,000	22,700	76,300	126,000	9	.....	2,815	31	.....
Connecticut	11	635,408	52,400	320,100	262,908	41	.....	3,620	195	148
Illinois	5	24,300	3,800	10,600	9,900	6	.....	840	24	.....
Indiana	10	83,125	13,725	24,500	44,900	17	.....	3,923	74	20
Iowa	7	177,350	17,550	66,000	93,800	16	.....	4,180	68	1
Kansas	5	47,600	2,600	22,000	23,000	6	.....	2,646	5	45
Maine	7	126,200	8,500	31,500	86,200	25	.....	3,830	62	16
Massachusetts	43	1,184,110	135,395	433,150	615,565	135	.....	34,798	770	318
Michigan	9	195,556	16,300	98,151	81,105	15	.....	1,282	12	426
Missouri	4	23,100	2,000	5,300	15,800	4	.....	888	28	9
New Hampshire	9	121,600	17,200	51,000	53,400	10	.....	1,760	52	50
New Jersey	5	255,000	14,300	46,500	194,200	8	3	4,100	194	8
New York	36	899,711	248,700	301,600	349,411	113	.....	24,654	411	391
North Carolina	6	19,440	3,040	8,600	7,800	2	.....	3,240	5	40
Ohio	18	99,100	12,700	38,700	47,700	18	.....	4,204	70	172
Pennsylvania	47	1,265,460	177,310	434,050	654,100	116	23	48,124	635	56
Rhode Island	6	294,500	38,500	160,000	96,000	30	.....	13,572	208	25
Tennessee	6	25,500	5,000	9,500	11,000	5	.....	1,930	42	12
Virginia	5	29,500	3,100	14,400	12,000	6	.....	950	14	11
West Virginia	3	10,200	2,600	4,900	2,700	3	.....	600	18	.....
Wisconsin	8	163,300	16,196	43,888	103,216	7	9	5,270	6	57
All other states (b)	13	195,800	28,300	72,500	95,000	20	.....	5,408	94	16

a Includes 34 hand looms.

b Includes states in which there were less than 3 establishments that were reported as idle during the census year, in order that the value of individual establishments may not be disclosed. These establishments were located as follows: Arkansas, 1; Delaware, 1; Georgia, 1; Kentucky, 1; Maryland, 2; Minnesota, 2; Nebraska, 1; Texas, 1; Utah, 1; Vermont, 2.

TABLE 17.—SHODDY MANUFACTURE,

	STATES	Number of establishments.	CAPITAL. Direct investment. Value of hired property.	Value of plant. Aggregate.	Value of plant. Total.	Value of plant. Land.	Value of plant. Buildings.	Value of plant. Machinery, tools, and implements.	Live assets. Total.	Live assets. Raw materials.	Live assets. Stock in process and finished products on hand.	Live assets. Cash, bills and accounts receivable, and all sundries not elsewhere reported.
1	The United States	94	$457,713	$3,754,063	$1,675,801	$265,500	$556,990	$853,311	$2,078,262	$923,209	$294,781	$860,272
2	Connecticut	7	6,650	395,336	152,666	14,900	72,275	65,491	242,670	142,500	45,100	55,070
3	Illinois	3	8,000	110,037	62,100	6,600	23,500	32,000	47,937	15,500	10,000	22,437
4	Massachusetts	29	36,200	902,850	445,412	87,200	161,854	196,358	457,438	157,597	92,320	207,521
5	New Hampshire	3	10,463	23,000	14,500	1,000	2,500	11,000	8,500	2,000	1,000	5,500
6	New Jersey	4	160,000	193,225	78,900	14,500	25,400	39,000	114,325	31,600	25,000	57,725
7	New York	12	6,500	482,520	239,261	48,800	92,461	98,000	243,259	107,763	32,770	102,726
8	Ohio	3	12,000	744,530	165,530	30,000	40,000	95,530	579,000	311,000	32,000	236,000
9	Pennsylvania	18	144,000	640,382	359,432	50,000	97,500	211,932	280,950	126,899	40,141	113,910
10	Rhode Island	10	62,500	194,250	119,600	9,000	20,000	90,600	74,650	19,000	9,450	46,200
11	All other states (*b*)	5	11,400	67,933	38,400	3,500	21,500	13,400	29,533	9,350	7,000	13,183

	STATES.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES—continued. Operatives and skilled—Continued. Children.	Operatives and skilled—Continued. Wages.	Unskilled. Males above 16 years.	Unskilled. Females above 15 years.	Unskilled. Wages.	POWER. Steam. Boilers. (Number.)	Steam. Engines. (Number.)	Steam. Horse power.	Water. Water wheels. Number.	Water. Water wheels. Horse power.	Water. Turbine wheels. Number.	Water. Turbine wheels. Horse power.	Other power. Number of motors.	Other power. Horse power.
12	The United States	38	$672,335	78	16	$34,764	89	62	4,312	23	1,075	38	1,617	3	55
13	Connecticut	8	71,023	3	.....	1,522	9	6	188	6	310	2	135	.....	.....
14	Illinois	.....	29,754	.....	.....	.....	2	2	215	.....	.....	.....	.....	.....	.....
15	Massachusetts	.....	147,339	12	5	5,274	25	18	1,040	8	380	20	799	.....	.....
16	New Hampshire	.....	10,650	.....	.....	.....	.....	.....	.....	1	50	1	30	.....	.....
17	New Jersey	4	33,805	4	3	1,800	4	3	260	.....	.....	4	130	.....	.....
18	New York	6	56,981	8	.....	3,080	10	6	310	2	150	6	303	.....	.....
19	Ohio	20	157,500	12	.....	5,100	8	3	640	.....	.....	.....	.....	1	30
20	Pennsylvania	.....	102,295	30	8	14,164	24	17	1,256	1	15	.....	.....	2	25
21	Rhode Island	.....	48,256	8	.....	3,260	5	5	283	1	40	5	220	.....	.....
22	All other states	.....	14,732	1	.....	564	2	2	120	4	130	.....	.....	.....	.....

	STATES.	MATERIALS USED—continued. Shoddy. Pounds.	Shoddy. Cost.	Waste and wool noils. Pounds.	Waste and wool noils. Cost.	Camel's hair and noils. Pounds.	Camel's hair and noils. Cost.	All other animal hair. Pounds.	All other animal hair. Cost.	Raw cotton. Pounds.	Raw cotton. Cost.
23	The United States	45,136,841	$3,447,172	10,997,044	$1,801,290	405,000	$29,300	30,000	$900	24,000	$2,260
24	Connecticut	4,420,000	339,100	685,000	40,300	.....	.....	.....	.....	14,000	1,160
25	Illinois	3,796,000	100,413	.....	.....	.....	.....	.....	.....	.....	.....
26	Massachusetts	13,672,070	992,656	283,587	91,465	.....	.....	.....	.....	.....	.....
27	New Hampshire	1,008,700	65,176	45,000	8,200	.....	.....	.....	.....	.....	.....
28	New Jersey	1,960,000	116,900	776,400	171,000	.....	.....	.....	.....	.....	.....
29	New York	1,610,171	158,506	2,492,000	156,765	.....	.....	.....	.....	.....	.....
30	Ohio	5,205,000	684,000	500,000	280,000	.....	.....	.....	.....	.....	.....
31	Pennsylvania	8,333,900	631,140	4,004,957	317,160	405,000	29,300	30,000	900	.....	.....
32	Rhode Island	3,316,000	281,300	2,210,100	736,400	.....	.....	.....	.....	10,000	1,100
33	All other states	1,815,000	77,981	.....	.....	.....	.....	.....	.....	.....	.....

a Includes pieceworkers and their wages.

BY STATES: 1890.

MISCELLANEOUS EXPENSES.							AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.							
							Aggregates.		Officers, firm members, and clerks.			Operatives and skilled. (a)		
Total.	Rent paid for tenancy.	Taxes.	Insurance.	Repairs, ordinary, of buildings and machinery.	Interest paid on cash used in the business.	Sundries not elsewhere reported.	Average number.	Total wages.	Males above 16 years.	Females above 15 years.	Wages.	Males above 16 years.	Females above 15 years.	
$238,094	$32,488	$13,084	$28,554	$53,814	$24,858	$85,296	2,299	$856,582	142	2	$149,483	1,174	849	1
26,099	400	1,391	3,027	7,029	5,320	8,932	180	85,816	12	2	13,271	139	16	2
11,610	400	395	544	525	4,500	5,246	114	36,254	4	.....	6,500	37	73	3
62,687	2,950	5,268	6,748	18,274	2,004	27,443	435	180,748	29	.....	28,135	288	101	4
1,795	875	180	190	550	.....	.....	25	11,683	1	.....	1,033	24	.....	5
20,150	8,500	900	725	2,375	1,500	6,150	127	43,755	10	.....	8,150	60	46	6
11,640	650	1,068	2,307	2,280	3,185	2,150	192	77,361	19	.....	17,300	132	27	7
28,266	1,200	1,646	5,600	2,100	5,500	12,220	696	182,700	12	.....	20,100	167	485	8
50,305	12,147	1,273	6,206	12,863	1,636	16,180	339	151,175	37	.....	34,716	181	83	9
22,278	4,546	622	3,197	6,200	1,113	6,600	146	68,014	14	.....	16,498	121	3	10
3,264	820	341	10	1,618	100	375	45	19,076	4	.....	3,780	25	15	11

MACHINERY.						MATERIALS USED.					
	Combing machines.		Spindles.	Looms on woolen goods.			Foreign wool in condition purchased.		Domestic wool in condition purchased.		
Cards. (Sets.)	Foreign.	American.	Woolen.	Broad.	Narrow.	Total cost.	Pounds.	Cost.	Pounds.	Cost.	Total foreign and domestic wool in scoured pounds.
470	1	1	3,170	6	16	$6,003,035	521,000	$84,930	784,400	$297,238	953,400
47	.....	.....	510	6	.....	442,852	80,000	12,000	100,000	18,000	98,000
12	.....	.....	.....	.....	.....	103,722	.....	.....	.....	.....	.....
167	.....	.....	210	.....	16	1,170,868	10,000	6,000	22,400	11,448	32,400
12	.....	.....	.....	.....	.....	86,816	15,000	11,250	.....	.....	15,000
19	.....	.....	.....	.....	.....	301,113	.....	.....	.....	.....	.....
36	.....	.....	.....	.....	.....	343,012	.....	.....	3,000	750	3,000
43	.....	.....	.....	.....	.....	1,100,480	16,000	11,680	108,000	63,600	124,000
62	1	1	450	.....	.....	1,205,258	400,000	44,000	296,000	76,000	429,000
58	.....	.....	1,970	.....	.....	1,165,235	.....	.....	249,000	126,000	249,000
14	.....	.....	.....	.....	.....	83,679	.....	.....	6,000	1,440	3,000

MATERIALS USED—continued.

Yarns not made in mill.				Oil.		Soap.		Chemicals and dyestuffs.	Fuel.			Rent of power and heat.	All other materials.	
Woolen.		Cotton.							Total cost.	Coal.	Wood.			
Pounds.	Cost.	Pounds.	Cost.	Gallons.	Cost.	Pounds.	Cost.	Cost.		Cost.	Cost.	Cost.	Cost.	
10,000	$4,000	25,000	$5,000	296,221	$89,245	267,200	$7,075	$78,519	$88,751	$88,291	$460	$5,809	$61,546	23
.....	.....	25,000	5,000	12,834	3,896	22,000	700	7,596	10,500	10,200	300	300	4,300	24
.....	.....	.....	.....	2,900	860	19,000	480	.....	1,835	1,835	.....	134	.....	25
.....	.....	.....	.....	70,333	26,552	22,500	450	13,620	22,769	22,769	.....	788	5,120	26
.....	.....	.....	.....	2,175	1,050	38,200	1,080	.....	60	.....	60	.....	.....	27
.....	.....	.....	.....	16,209	4,723	1,250	25	1,800	5,765	5,765	.....	500	400	28
10,000	4,000	.....	.....	13,070	3,992	5,000	100	7,223	6,576	6,576	.....	900	4,200	29
.....	.....	.....	.....	47,500	16,900	56,250	1,150	28,900	14,250	14,250	.....	.....	.....	30
.....	.....	.....	.....	113,000	24,252	2,000	70	16,600	18,026	18,026	.....	1,300	46,510	31
.....	.....	.....	.....	14,020	5,780	101,000	3,020	2,780	6,605	6,555	50	1,300	950	32
.....	.....	.....	.....	4,180	1,240	.....	.....	.....	2,365	2,315	50	587	66	33

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: California, 1; Maine, 2; Vermont, 1; Wisconsin, 1.

TABLE 17.—SHODDY MANUFACTURE,

	STATES.	PRODUCTS.								
		Aggregate value.	Horse blankets, all wool.		Boot and shoe linings.		Partly manufactured goods for sale.			
							Total.		Shoddy and mungo.	
			Square yards.	Value.	Dozens.	Value.	Pounds.	Value.	Pounds.	Value.
1	The United States....	$7,887,000	30.000	$24,000	54,000	$20,000	45,999,391	$7,750,997	37,002,054	$5,911,219
2	Connecticut	648,060	30,000	24,000	54,000	20,000	4,337,000	604,060	2,398,000	390,760
3	Illinois	182,110	.....	.....	.....	.....	2,528,616	167,007	2,528,616	167,607
4	Massachusetts	1,614,459	.....	.....	.....	.....	11,384,508	1,614,459	10,018,424	1,418,817
5	New Hampshire	111,848	.....	.....	.....	.....	911,763	111,848	911,763	111,848
6	New Jersey	389,640	.....	.....	.....	.....	1,616,000	389,640	1,252,000	315,640
7	New York	471,478	.....	.....	.....	.....	2,820,717	411,578	2,616,000	383,200
8	Ohio	1,377,500	.....	.....	.....	.....	4,800,000	1,377,500	4,800,000	1,377,500
9	Pennsylvania	1,633,770	.....	.....	.....	.....	12,317,832	1,633,770	9,507,875	1,366,663
10	Rhode Island	1,350,792	.....	.....	.....	.....	3,984,379	1,333,192	1,711,000	274,741
11	All other states	107,343	.....	.....	.....	.....	1,298,576	107,343	1,258,376	104,443

a Includes items as follows: rags, $14,503; batts, $59,900; custom work, $17,600.

BY STATES: 1890—Continued.

PRODUCTS—continued.											
Partly manufactured goods for sale—Continued.										All other products. (a)	
Woolen yarn—all wool.		Woolen card rolls.		Worsted noils.		Waste.		Wool extract.			
Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Value.	
443,739	$82,432	200	$100	500,000	$335,000	4,544,597	$948,026	3,508,801	$474,220	$92,003	1
.....	.....	.....	.....	.....	.....	139,000	17,300	1,800,000	196,000	.....	2
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14,503	3
.....	.....	.....	.....	.....	.....	166,000	16,600	1,200,084	179,042	.....	4
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5
.....	.....	.....	.....	.....	.....	.....	.....	364,000	74,000	.....	6
.....	.....	.....	.....	.....	.....	60,000	3,200	144,717	25,178	59,900	7
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8
350,000	40,000	.....	.....	.....	.....	2,459,957	227,107	.....	.....	.....	9
93,739	42,432	.....	.....	500,000	335,000	1,679,640	681,019	.....	.....	17,600	10
.....	.....	200	100	.....	.....	40,000	2,800	.....	.....	.....	11

COTTON MANUFACTURE.

BY EDWARD STANWOOD.

The statistics pertaining to cotton manufacture prior to the census of 1840 are meagre and not altogether trustworthy. It was found impossible to reduce them to tabular form for the purpose of comparison with subsequent reports. Therefore, the figures for previous censuses shown in this report are confined to the past five decades. Table No. 1 is a résumé of the statistics pertaining to the cotton industry from 1840 to 1890, inclusive, all the items that were common to a number of census reports being presented.

The growth of the industry during the past ten years is shown in the following statement which presents the leading facts as reported by the censuses of 1890 and 1880:

COTTON MANUFACTURE, SUMMARY: 1890 AND 1880.

ITEMS.	1890	1880	Increase.	Per cent.
Number of establishments	905	756	149	19.71
Capital	*a* $354,020,843	$208,280,346	$145,740,497	69.97
Miscellaneous expenses	$16,716,524	(*b*)	.....	.....
Average number of employés (aggregate)	221,585	174,659	46,926	26.87
Total wages	$69,489,272	$42,040,510	.....	.....
Officers, firm members, and clerks	2,709	2,115	594	28.09
Total wages	$3,464,734	(*b*)	.....	.....
All other employés	218,876	172,544	46,332	26.85
Total wages	$66,024,538	$42,040,510	$23,984,028	57.05
Cost of materials used	$151,912,970	$102,206,347	$52,706,632	51.57
Value of products	$267,981,724	$192,090,110	$75,891,614	39.51
Number of active spindles	14,188,103	10,653,435	3,534,668	33.18
Number of looms	324,866	225,759	99,107	43.90
Bales of cotton consumed	2,261,600	1,570,344	691,256	44.02
Pounds of cotton consumed	1,117,945,776	750,343,981	367,601,795	48.99

a Does not include the value of "Hired property".

b Not reported.

In presenting the figures relative to cotton manufacture, it should be premised that the establishments here reported are exclusively those engaged in spinning or weaving raw cotton, together with those which convert the waste of cotton mills into a commercial product. The tables do not cover the operation of any establishments for the manufacture of hosiery and knit goods, nor any of those principally engaged in making elastic fabrics or cotton cordage and twines. Moreover, all mills in which mixed textiles are produced are excluded. An inspection of the table which shows the materials of manufacture discloses the fact that less than one-half of 1 per cent of the total value of the fiber entering into the materials of these mills was other than cotton. The comparison is made with those mills which were classed in the census report of the Tenth Census as "specific cotton mills", from which category the special agent excluded "mills employed in working raw cotton, waste, or cotton yarn into hose, webbing, tapes, fancy fabrics, or mixed goods, or other fabrics, which are not sold as specific manufactures of either cotton or wool". The comparison is, therefore, as nearly as possible, between the same classes of mills. But the facts regarding what were grouped under the head of "special mills" in the report for the Tenth Census are now distributed among several classes of manufacture.

CAPITAL.

A comparison of capital employed in the industry in 1880 and 1890 is not to be relied upon as an indication of the increase that has actually taken place. The inquiry at the Tenth Census was not so minute as that employed in the present investigation. At the census of 1890 the purpose was to ascertain the actual value of the property at the time the report was made, whether real estate, stock on hand, or money and book accounts, and whether owned or borrowed. It is evident that the more detailed inquiry results in a considerable apparent increase of capital reported. In other words, it is believed the amount of capital now shown is much more nearly the real capital engaged in the manufacture than that reported at the former census, and the indicated increase is considerably in excess of the real increase.

Aside from the general importance of the item of capital, as a fact bearing upon the conditions of manufacturing, an importance which has no special significance as applied to the industry of cotton manufacturing, the statement of the value of land, buildings, and machinery possesses the largest interest. Were it possible to compare mills spinning the same number of yarn, of the same age, equally well kept up, in different parts of the country, the facts ascertained might be valuable to those who may be called upon to consider where is the best location for a contemplated new mill; but the establishments reported include mills, new and old, large and small, spinning yarn coarse and fine, equipped with the most modern machinery or filled with antiquated appliances.

The value of plant to a spindle throughout the country appears to be $16.28. In New England the amount is $14.45; in the middle states, $20.21; in the southern states, $24.40; in the western states, $21.00. This statement, it should be observed, is to be modified, not only in the light of the facts just mentioned, but also, what is very important, by giving due weight to the fact that all the mills, of which these amounts are an average, are not complete spinning and weaving mills. There are no official returns for any former period with which to compare these figures. The cost of mills per spindle has been the subject of private inquiry at various times. Perhaps the most extensive examination of the question was made by Mr. J. P. Harris-Gastrell, a former attaché of the British legation at Washington, whose report on the subject of textile manufactures in the United States was presented to the British parliament in 1873. At that time the cost of constructing a mill, including the land, was estimated by him at $20 per spindle, in gold. Mr. David A. Wells' report, made in 1869, was quoted, to the effect that a cotton mill which could be built 10 years before for $15 to $17 a spindle, then (in 1869) cost $30 to $32 in currency per spindle, equivalent to $22.50 to $24.75 in gold. Mr. Harris-Gastrell gave several detailed estimates and authenticated statements as to the cost of mills then recently built, ranging from $15 without land to $18 and $20 with real estate, and concluded that the average cost did not exceed $20, including land, this being cost in gold.

MISCELLANEOUS EXPENSES.

The items which go to make up the miscellaneous expenses reported in cotton mills during the census year are as follows:

Total	$16,716,524
Rent paid for tenancy	488,735
Taxes	2,689,632
Insurance	1,213,322
Repairs, ordinary, of buildings and machinery	3,987,748
Interest paid on cash used in the business	4,098,435
Sundries, not elsewhere reported	4,238,652

The insignificance of the amount paid for rent is explained by the fact that the corporations operating the mills reported are almost invariably the owners of the land and buildings occupied by them. It probably is true that some of the large corporations of New England, whose treasurers and active managers have offices other than those at the mill, have included the rent of such offices with the sundry expenses reported above. The use of rented property for the installation of weaving machinery is a feature of the manufacture in the city of Philadelphia, which explains the circumstance that more than one-fourth of all the rent paid is credited to Pennsylvania.

The taxes paid amount, for the whole country, to an average of 1.16 per cent of the total value of the plant. This is, perhaps, a somewhat lower rate than the local taxation upon real estate generally, and the difference is to be accounted for in part at least by the fact that municipalities are accustomed in some states to offer the inducement of exemption from all taxation for a term of years, in order to attract manufactures.

The insurance paid averages 0.58 per cent on the value of buildings and machinery. The difference between the rates in the several geographical divisions of the country is quite marked. It is, in each case on the value of buildings and machinery, in New England 0.50 per cent; in the middle states 0.57 per cent; in the south 0.89 per cent; in the west 0.95 per cent. The explanation of this difference is simple. The great New England corporations adopt in their mills a variety of costly appliances (which enter into the value of their plant) to protect themselves against fire, and having done so either take out no insurance or insure in mutual companies where the cost of the risk is reduced to a minimum by the practice of these companies to insist upon the use of the appliances referred to.

"Interest on cash used in the business" gives no exact information as to the amount of money borrowed. If we may estimate that the average rate was not far from 5 per cent, we shall be led to think that the corporations were debtors for cash employed in their business to an average amount of about $82,000,000, or not far from two-thirds of their live assets. The cost of repairs and the sundries, which complete the above list of miscellaneous expenses, call for no comment.

ITEMS IN COST OF MANUFACTURE.

Although the ascertainment of the profits of manufacturing is no part of the purpose of the Census inquiry, and although the facts which can be procured by an official examination must necessarily omit many items and circumstances which must be considered before the actual profits are disclosed, yet the omissions are now so much fewer than on any former occasion that we can certainly arrive at a nearer approximation to the truth regarding the margin of profit than ever before, as shown by the following statement:

EXPENSES AND PRODUCT.

Value of products		$267,981,724
Cost of materials used	$154,912,979	
Wages	66,024,538	
Salaries of officers and clerks	3,464,734	
Miscellaneous expenses	16,716,524	
		241,118,775
Remainder		26,862,949

This remainder represents 7.59 per cent of the capital, excluding the value of hired property, but it represents much more than the actual profits of manufacturing. All capital expenditures, excepting rent and interest paid for cash used in business, are excluded from the items entering into the cost of production. Ordinary repairs are included, but all renewals and expenditures on account of depreciation of machinery are omitted. The cost of renewal takes a large percentage of nominal profits in a cotton spinning mill. An allowance of 3 per cent of the value of the buildings and machinery is a moderate one. This would be a gross sum of $6,233.054. Reducing the $26,862,949 shown above by this sum the remainder will be $20,629,895, which is 5.83 per cent on the reported capital.

The general relation of the components entering into the selling price of the products of this manufacture may be indicated by the statement that 43.81 per cent represents the cost of the raw cotton consumed, and 14.00 per cent the cost of other materials, so that 57.81 per cent of the whole value consists of materials. The miscellaneous expenses of manufacture stand for 6.24 per cent; labor, including salaries of officers and clerks, for 25.93 per cent, and 10.02 per cent is left to cover the depreciation of plant and the return of a profit to the owners. The following table exhibits a division of the selling price of commodities between these several elements of cost, for each of the geographical divisions of the country:

PERCENTAGES OF DIFFERENT ELEMENTS IN COST OF MANUFACTURE TO VALUE OF PRODUCT.

GEOGRAPHICAL DIVISIONS.	Cotton.	Other materials.	Miscellaneous expenses.	Labor.	Margin.
United States	43.81	14.00	6.24	25.93	10.02
New England	42.38	13.44	6.67	27.56	9.95
Middle states	34.20	22.47	5.14	26.47	11.72
Southern states	59.04	7.84	5.44	18.83	8.85
Western states	47.49	16.53	6.05	21.31	8.62

SPINDLES.

NUMBER IN OPERATION.

The total number of cotton spindles in the United States as shown at the census of 1890 was 14,550,323. Of these spindles 14,188,103 were in cotton mills reported in the accompanying tables, mills which were in active operation during some part at least of the census year; 166,143 were in cotton mills which were idle during the whole of the census year, and 196,077 were cotton spindles in mills devoted to the manufacture of woolen and worsted fabrics, or of hosiery and knit goods. The very small number of idle spindles during the census year indicates the general prosperity of the industry. In almost every case in the northern states the mills which stood idle had for some cause or other become bankrupt in earlier years and were in process of reorganization. No explanation of the nonoperation of the mills in other parts of the country has been obtained. With respect to the spindles in woolen and other mills it need only be said that a certain number of woolen factories manufacture their own warps for use in mixed goods. Where pure cotton goods were a distinct product of factories using both wool and cotton, a double report was made, and such establishments were treated as two separate establishments. The spindles now under notice are in mills where no division was possible.

The full details of spindles in the several states are to be found in the following table:

GENERAL STATEMENT OF COTTON SPINDLES IN THE UNITED STATES, 1890 AND 1880, BY STATES.

	Total cotton spindles.	Active spindles in cotton mills.				1890	
		Total.		1890		Idle spindles in cotton mills.	Cotton spindles in woolen mills.
	1890	1890	1880	Mule.	Frame.		
The United States	14,550,323	14,188,103	10,653,435	5,363,486	8,824,617	166,143	196,077
New England states	11,030,458	10,836,155	8,632,087	4,391,895	6,444,260	96,161	98,142
Maine	914,506	885,762	695,924	344,697	541,065	21,744	7,000
New Hampshire	1,198,643	1,195,643	944,053	364,234	831,409		3,000
Vermont	71,591	71,591	55,081	42,735	28,856		
Massachusetts	5,895,109	5,824,518	4,236,084	2,430,719	3,393,799	22,257	48,334
Rhode Island	1,994,602	1,924,486	1,764,569	811,869	1,112,617	35,308	34,808
Connecticut	956,007	934,155	936,376	397,641	536,514	16,852	5,000
Middle states	1,736,319	1,633,722	1,391,164	822,613	811,109	20,300	82,297
New York	649,624	606,796	561,658	334,210	272,586	20,300	22,528
New Jersey	374,442	374,442	232,221	304,480	69,962		
Pennsylvania	496,551	439,638	425,391	175,687	263,951		56,913
Delaware	53,916	53,916	46,188	2,880	51,036		
Maryland	161,786	158,930	125,706	5,356	153,574		2,856
Southern states	1,613,280	1,554,000	542,048	108,474	1,445,526	49,682	9,598
Virginia	94,294	94,294	44,340	13,198	81,096		
North Carolina	344,606	337,786	92,385	30,920	306,866		6,820
South Carolina	334,476	332,784	82,334	4,000	328,784	1,692	
Georgia	469,468	445,452	198,656	20,524	424,928	24,016	
Alabama	83,002	79,234	49,432	9,460	69,774	3,640	128
Mississippi	57,004	57,004	18,568		57,004		
Kentucky	42,942	42,942	9,022	8,784	34,158		
Tennessee	107,458	97,524	35,736	21,588	75,936	9,134	800
All other states	80,030	66,980	11,575		66,980	11,200	1,850
Western states	170,266	164,226	88,136	40,504	123,722		6,040
Ohio	16,580	16,560	13,328	8,152	8,408		20
Indiana	80,604	74,604	33,396	16,320	58,284		6,000
Illinois	21,800	21,800		8,000	13,800		
Wisconsin	32,592	32,592		5,632	26,960		
All other states	18,690	18,670	41,412	2,400	16,270		20

THE UNIT OF CAPACITY—THE SPINDLE.

The foregoing table is that which exhibits most broadly and most accurately the capacity of the cotton mills of the United States. The number of working spindles is by no means an exact measure of capacity, but it is by far the best measure. Either the quantity of raw material, that is of cotton, or the superficial area or weight of the product, as such a measure, is open to the fatal objection that the cheapest goods are those in the making of which the largest amount of cotton is consumed. The value, either of raw cotton used or of the finished product of the spindle and the loom, is comparatively useless as a measure of capacity, since a turn in the market might cause a real increase in mill capacity to disappear, while a turn in the other direction might create an appearance of increase when there had been actually a reduction. The imperfection of the spindle as a true measure of capacity is like the imperfection of a chronometer. Since the amount of correction necessary may always be ascertained with a fair degree of accuracy the relative capacity of production at different periods may be learned within a small limit of error. The improvement in spindles during the century of cotton manufacture has been enormous. For the greater part of the time the improvement in the machinery of cotton mills may be said to have been continuous. Numerous changes for the better in the form of the spindle have been made, and the mills have hardly been equipped with spindles of an improved pattern before a still better spindle was offered them. In recent years there has been steady progress, and during no former decade has the necessary correction of the spindle as a measure of productive capacity been so great as it has during the years from 1880 to 1890. Indeed, not to discuss the question whether the modern carding machine or the modern spindle is the more important agent for economy in manufacture, yet so much more attention has been paid to spindles by manufacturers generally that the introduction of better spindles forms the most important feature of the development of the cotton industry that is brought out by the census. There are two types of machinery by which the spinning of cotton is performed, the mule and the spinning frame. Each of these machines has been brought by experiment and invention to a point where it performs its work with such accuracy and excellence that it seems endowed with more than human intelligence, while its speed and capacity of production are so great that a single operative with modern machinery is more than

the equal of a regiment of hand spinners. The self-acting mule was brought to a high state of efficiency before the principle of self-centering spindles, running in loose bearings, for frame spinning had been invented. Consequently the mule was for a long time and perhaps still is in England the favorite machine, especially for the better and finer classes of goods.

The invention of the ring-spinning frame and the wire "traveler" was a great step in advance, and rendered possible the use of rapid spindles. During the last twenty years invention has been applied with marvelous results to the production of spindles capable of high speed. In 1871 the most rapid spindles were capable of making 5,500 turns a minute. The most improved spindles of to-day can be run 9,000 to 10,000 turns. Inasmuch as the amount of yarn that may be made is almost directly proportioned to the speed of the spindle, it follows that a spinning frame of the latest type can make at least 50 per cent more yarn of the same fineness than was the capacity of the best frames in existence in 1870. While this improvement in machinery did not by any means supersede the use of the mule, it did result in an improved quality of yarn from the frame, and the relative cheapness of this method of spinning reversed the tendency toward mule spinning that had long been a feature of the industry. No attempt was made by the census prior to 1870 to ascertain the respective numbers of frame and mule spindles in the cotton mills of the country. The Ninth Census reported 3,694,477 frame spindles, and 3,437,938 in mules. The respective numbers were not ascertained in 1880, but in 1890 it is found that there were 8,824,617 frame spindles and 5,363,486 mule spindles. Thus, in twenty years the percentage of increase of frame spindles has been 138.86 and that of mules 56.01.

THE REVOLUTION IN RING SPINNING.

In no department of industry is there a greater degree of attention paid by manufacturers to the improvement of machinery in the mills than in the cotton industry. The margin of profit depends upon the saving of a fraction of a cent in the price of a pound of cotton and the economy of another small fraction of a cent in working the cotton into yarn or cloth. In order to effect this second economy the most efficient machinery must be provided, and whatever becomes obsolete must be boldly removed from the mill and replaced by what is better. This being the common practice of cotton manufacturers it will readily be seen what the increase in the number of frame spindles in twenty years signifies. In 1870, as has been said, the highest type of frame spindles was capable of a speed of 5,500 revolutions a minute. But inasmuch as the inventions which gave that result were then comparatively recent, a small proportion only of the spinning frames then in use were supplied with them. Since then most of the mills have replaced their frame spindles at least once, and in a large number of cases twice. This will appear from a table appended which shows the number of frame spindles of the self-centering type sold by all the manufacturers of such spindles in the country, for each year of the decade, from May 1, 1880, to April 30, 1890. From this it appears, as a grand result, that 6,000,193 such spindles, all being of the highest capacity and speed ability, were placed in the cotton mills of the country between the dates of the Tenth and the Eleventh Censuses. Roughly speaking, more than two-thirds of all the frame spindles now reported are of the highest type, since most of the important improvements in frame spindles now in use were patented as early as 1880. Moreover, the change effected is not fully represented even by this statement. While all manufacturers are not able to throw aside their machinery and replace it with that of the most modern type, they are frequently enabled to make an improvement. Machinery which, though by no means worn out, is thrown out of certain highly organized mills, because better machinery has been invented, is disposed of to dealers in second-hand machinery, and is by them sold to mills which can not afford to replace their worn-out plant with wholly new machinery. Bearing this in mind we may say with confidence that while two-thirds of all the frame spindles now in use are of the newest type and the highest capacity, and have been introduced in the last ten years, substantially all the rest are equal in spinning power to the best known up to the year 1870. The following table shows by years and by geographical divisions, north and south, the number of frame spindles in new frames and in old frames:

SUMMARY OF FRAME SPINDLES, SALES FROM MAY 1, 1880, TO APRIL 30, 1890.

YEARS.	Grand total.	NORTHERN STATES.			SOUTHERN STATES.		
		Total frames.	New frames.	Old frames.	Total frames.	New frames.	Old frames.
Total	6,000,193	5,131,485	3,561,896	1,569,589	868,708	760,525	108,183
1880–1881	861,626	828,345	524,587	303,758	33,281	24,586	8,695
1881–1882	563,275	529,571	412,983	116,588	33,704	22,132	11,572
1882–1883	589,863	521,943	405,482	116,461	67,920	53,290	14,630
1883–1884	485,207	421,040	290,007	131,033	64,167	55,682	8,485
1884–1885	231,058	190,062	163,042	27,020	40,996	39,429	1,567
1885–1886	343,257	302,439	192,018	110,421	40,818	40,160	658
1886–1887	545,912	480,795	355,451	125,344	65,117	55,210	9,907
1887–1888	493,533	419,798	240,372	179,426	73,735	66,103	7,632
1888–1889	774,630	555,265	403,954	151,311	219,365	179,690	39,675
1889–1890	1,111,832	882,227	574,000	308,227	229,605	224,243	5,362

In the northern mills there were placed 3,561,896 spindles in new frames, a part of which were of the plant of new mills, or of old mills enlarging operations, and a part were new spindles replacing old ones removed, and 1,569,589 spindles in old frames, all of which represent substitution of new machinery for old. The sum of these numbers is 5,131,485, which is 71.52 per cent of all the active frame spindles reported in the cotton mills of the northern states. Including Delaware and Maryland as among the southern states, the spindles in new frames in the south were 760,525; in old frames 108,183; together they were 868,708, or 52.64 per cent of the 1,650,136 active frame spindles in the cotton mills of that part of the country. The great improvement in the machinery of cotton mills both north and south which is exhibited in these facts is reflected in more than one of the comparisons which are possible between the production of goods in 1880 and in 1890, but in none more clearly than in the statement of the average consumption of cotton per spindle.

IMPROVEMENTS IN MULE SPINNING.

While the great improvements here noted in frame spinning have been taking place, that marvellous piece of machinery, the mule, has been brought nearer to perfection, and its efficacy has been increased nearly, if not quite, as much as that of the frame spindle. Before 1870 the use of the mule was principally for spinning filling; but for print cloths and other medium goods it was used for making warps also. The great impetus which cotton manufacturing received in the early years of the decade which began with 1871, and the improvement in ring spinning compelled the makers of mules to see what invention could do to make their machinery more efficient. At that time the limit of speed of a mule spinning No. 36 yarn, which is the ordinary yarn for filling for print cloths and other medium goods, was $3\frac{1}{4}$ to $3\frac{1}{2}$ "stretches" of 60 inches per minute. Inferior and old pattern mules made only 3 stretches, or even less, per minute. As in the case of frame spinning, the speed of the spindle fixed the limit of production; that is to say, while it was easily possible to run the machinery at a higher speed, for that was a mere matter of the application of power, the spindle itself could not be made to produce good yarn of the fineness mentioned if run at a higher speed. The efforts of manufacturers were successfully made in several directions. First, the spindle itself was improved, the change taking chiefly the form of improved workmanship. The new spindle was like the old, but it was better made and stronger, the self-centering principle which has made so great a change in frame spindles being adapted to the mule spindle. Inasmuch as the change required only the addition of a self-adjusting bolster and an improved step to spindles already in use, the improvement was much more readily available than one which rendered necessary the discarding of the old spindles. This improvement dates from 1885. The effort at producing a better mule spindle was a result not simply of competition with frame spindles, but of the tendency to the production of finer yarns. The usual twist in No. 36 filling yarn is 19 or 20 turns to the inch, but as yarns become finer the number of turns increases rapidly. In order, therefore, to produce the same length of finer yarn, spindles must be run more rapidly, though the speed of the carriage does not increase; or the carriage must come to a stop while "standing twist" is given to the yarn, before the motion known as backing off and winding begins. The improvement which was adopted chiefly with reference to fine spinning was of great advantage in the spinning of medium counts; for when the available speed of the spindle had become greater than was necessary to give the requisite twist for 3 or $3\frac{1}{2}$ stretches of 60 inches each in a minute, it was possible both to lengthen the stretch and increase the number. Thus, at present the improved mule when spinning No. 36 yarn is capable of making in one minute $4\frac{3}{4}$ to 5 stretches of 64 inches each. Indeed, in some cases the stretch is increased to 67 inches by the adoption of a new roller delivery, by which roving continues to be supplied to the amount of 3 inches, one turn of the roller, while the spun yarn is being wound during the return of the carriage. These several improvements have added about 50 per cent to the product of yarn per spindle. The spindle itself had formerly a speed of about 7,000 turns a minute. The new self-centering spindle has a speed of more than 10,000 turns. Since 1884 machinery makers have devoted themselves to strengthening the parts of the mule to enable it to bear the increased speed, and to simplifying it to adapt it to the class of help which the great demand for spinners has required manufacturers to employ; and several other improvements, very important in combination, have been introduced, which are of too technical a character to be described here. Some experimenting has taken place in the direction of a considerable increase in the length of mules. Machines have been made as long as 117 feet and containing 1,100 spindles. The object of this change is partly economical and partly to produce better yarn. One spinner and a helper are employed for a pair of the long mules and breaks are more quickly repaired.

CONSUMPTION OF COTTON PER SPINDLE.

The improvement noted above in both mule and frame spindles does not fully appear in the following table, which shows the consumption of raw cotton per spindle for each of the geographical divisions and for the United States. The increased fineness of goods, which is referred to elsewhere, interferes to complicate the matter. Nevertheless, it should be noted that, taking the country at large, in spite of the greater fineness of yarn spun the average consumption has increased from 70.43 pounds to 78.79 pounds since 1880. In New England, where the average number of yarn, estimated by the only process which is available for purposes of comparison, has increased from 30 to 31.31, the average consumption of cotton has, nevertheless, increased from 62.72 pounds to 65.95 pounds,

and in the south, where the average number is also higher than it was ten years ago, the annual consumption is larger by 5.47 pounds than in 1880. An average of this sort, however, is not very instructive, since, as is explained further on, the consumption of cotton is so very greatly dependent upon the relative coarseness or fineness of the yarn spun. This is evident in the fact that the southern mills consume two and a half times as much cotton to a spindle as those of New England, although the efficiency of southern spindles is, upon the whole, not equal to that of New England spindles. A similar remark may be made as to the teaching of the table on page 167, showing the elements of cost in the product of cotton mills, where it appears that the percentage of cost of cotton is much higher in the southern mills than in the rest of the country. The simple explanation is, of course, that the weight of cotton in the average yard of southern woven goods is much greater than in the New England or middle states.

COTTON CONSUMED PER SPINDLE.

GEOGRAPHICAL DIVISIONS.	1890 (Pounds.)	1880 (Pounds.)
United States	78.79	70.43
New England states	65.05	62.72
Middle states	78.46	78.58
Southern states	161.41	155.94
Western states	147.55	171.55

OTHER IMPROVEMENTS IN MACHINERY.

Other great improvements have taken place in cotton machinery during the last twenty years, and many of them within the last decade. The modern cotton opener is a marvelously more effective machine than that which it superseded, but a still greater improvement is that in cotton cards. It is held by some manufacturers that the new carding machine has introduced an economy in the production of yarn not less important than that in spindles.

LOOMS.

The number of looms in operation in 1890 was 324,866 against 225,759 in 1880; an increase of 99,107 in number, and of 43.90 per cent. The following table shows the number of looms in 1880 and 1890, together with the numerical and percentage increase during the decade for each of the geographical divisions.

NUMBER OF LOOMS: 1890 AND 1880.

GEOGRAPHICAL DIVISIONS.	NUMBER OF LOOMS.		INCREASE.	
	1890	1880	Number.	Per cent.
United States	324,866	225,759	99,107	43.90
New England states	250,116	184,701	65,415	35.42
Middle states	35,074	27,318	7,756	28.39
Southern states	36,266	11,898	24,368	204.81
Western states	3,410	1,842	1,568	85.12

An exhibit is made in the general table relating to machinery of the number of looms at work upon various classes of goods. Inasmuch as the facts of this character were not collected at the Tenth Census no comparison is possible.

THE GEOGRAPHICAL DISTRIBUTION OF THE INDUSTRY.

The geographical distribution of the cotton manufacturing industry is an interesting study, and it is made especially so at the present time by the fact that during the last ten years a change has been taking place, which, if it should continue, will become highly important. New England has been from the beginning the chief seat of the industry. Fifty years ago, when the census first attempted an exact statement of the number of spindles in each of the states, New England had 70 per cent of all the spinning machinery in the country. In 1840 the several New England states ranked in relative importance in cotton spinning exactly as they do to-day. Massachusetts stood first, followed in order by Rhode Island, New Hampshire, Connecticut, Maine and Vermont. The number of spindles was not taken at the census of 1850, but in 1860 we find New England reporting nearly 74 per cent of all the spindles in the United States; in 1870 this group of states had 77 per cent; in 1880 it had 81 per cent; and according to the present census 76 per cent. During this whole period of fifty years, which has seen an increase from 2,284,631 to more than 14,000,000 spindles, New England has retained an almost unvarying proportion of the spindles, and during the whole time the several states of the group have stood in the same relative rank. Moreover the industry has shown an extraordinary steadiness of concentration in certain regions. More than one-fourth of the cotton spindles in the country (29.61 per cent) are in the two adjoining

counties of Bristol in Massachusetts and Providence in Rhode Island. Lowell and Lawrence in Massachusetts, Manchester and Nashua in New Hampshire, Biddeford and Lewiston in Maine, are also large centers of production; and it is still true that either of these centers is more important than any single city outside of New England, except Cohoes, New York. The greatest concentration has taken place in the city of Fall River, Massachusetts, which now reports 41 establishments, having a capital of more than $32,000,000. The mills of this city are very largely devoted to the production of print cloths, of which they turned out during the census year, 443,043,437 square yards, equivalent to very nearly 600,000,000 running yards, or 12,000,000 pieces.

In 1890 Massachusetts contained 41.05 per cent of the entire number of active spindles in the country as compared with 39.76 per cent in 1880, being the only New England state maintaining its percentage in this respect, the percentage of Maine having declined from 6.53 to 6.24; of New Hampshire, from 8.86 to 8.43; of Vermont, from 0.52 to 0.50; of Rhode Island, from 16.56 to 13.56; of Connecticut (the only state in the east which exhibits a decrease in the number of spindles), from 8.79 to 6.58. In the aggregate, although New England added more than 2,000,000 to the number of its spindles, its percentage of the spinning capacity of the country declined from 81.03 to 76.37. The group percentages vary slightly from the sum of state percentages included by reason of the accumulated value of decimals rejected in the details.

GROWTH IN THE SOUTH.

In considering the geographical distribution of the cotton manufacturing industry the most important act is the extraordinary rate of its growth in the south during the past decade. For a great many years, probably ever since the cultivation of the cotton plant in the South Atlantic states had a beginning, domestic spinning and weaving of coarse cotton fabrics has been a common fact in the household economy of that part of the country. Here and there small factories were established for the production of heavy fabrics. It is only within the period since the close of the civil war that mills have been erected in the south for the purpose of entering the general market of the country with their merchandise, and almost all the progress made in this direction has been effected since 1880. According to the Tenth Census there were in the states south of the District of Columbia only 542,048 spindles. If the whole cotton manufacturing in all these states had been concentrated in one state it would have raised that state to the seventh rank only in point of capacity of production A remarkable development of manufacturing enterprise in the south, based on the nearness of supplies of raw material, which began ten years ago, had no more reasonable field in which to exercise itself than that of cotton spinning. New mills sprang up all over the region, but particularly in the states of North Carolina, South Carolina, and Georgia. The number of establishments in these three states, as reported in 1890, is greater by 75 than in 1880, an increase of nearly 73 per cent; but even this does not adequately express the progress that has been made; for a certain number of antiquated mills which have ceased operation forever cause the apparent growth to be less than the real increase. It may be noted, as illustrating the development of the industry in these states, that the average number of spindles to a mill has also increased nearly 73 per cent. The aggregate number of spindles in 1890 was almost three-fold that reported at the previous census. While the largest absolute increase has taken place in these three states there has been quite as large a proportional increase in other states of the south. The table showing the classified products of mills indicates what progress has been made in occupying markets which were previously in the exclusive possession of northern mills. The sheetings and print cloths of the south are consumed in northern homes and southern yarns are woven on Pennsylvania looms and made into hosiery on New York and Pennsylvania knitting frames. While the demand for coarse fabrics for the clothing of colored laborers is still large and is for the most part met by the local production, the mills are also turning out goods of a finer quality, as is indicated by the table which exhibits the average number of yarn spun. The new mills are for the most part equipped with the latest and most approved machinery. The advantages which the south possesses in nearness to the supply of raw material and in the abundance of comparatively cheap labor are partially offset by certain disadvantages, some of which time and experience will cause to disappear. It can not be doubted that the development of this industry in the cotton-raising states is based upon sound commercial reasons, and that it is destined to continue.

The increase of manufacturing in the middle states has been at a slower rate than in any other part of the country. Substantially three-fifths of the increase has been in the state of New Jersey, and is largely due to the development of the spool-thread industry in the great mills in and near Newark. The industry in Pennsylvania is rather of a weaving than of a spinning character. The contrast between these two states is quite marked when we observe that there are in New Jersey nearly 102 spindles to every loom, and only 31 spindles to a loom in Pennsylvania. In Massachusetts, which is both a spinning and a weaving state, the number is nearly 44 spindles to one loom.

The manufacture of cotton goods in the west, while it exhibits a good rate of growth during the decade, is still too small to call for extended notice.

The future development of this industry, considered geographically, depends upon a great variety of conditions, among which may be mentioned the relative cheapness of transportation of the raw material to the several competing regions; nearness to the market where finished goods are sold; economy of power, whether water power or steam; the supply of labor capable of adapting itself to this branch of industry; and the spirit of the state laws regarding the employment of labor. To these considerations some students of the question would

add that the atmospheric conditions must also be taken into account. It is true that while a humid state of of the atmosphere is favorable to good spinning of cotton, particularly of fine yarns, there are certain regions where the degree of natural humidity is both greater and more uniform than it is elsewhere. Nevertheless, the advantage which the climate of the British Isles possesses in this respect has been overcome by mechanical appliances adopted in the American mills, and there seems to be no reason why, if it should be worth while on other accounts to locate mills where the atmosphere is relatively dry, the same means should not be found effectual to neutralize one of the disadvantages imposed by nature.

EMPLOYÉS AND WAGES.

The average number of employés in the cotton industry during the census year, including officers and clerks, was 221,585, an increase of 46,926, or 26.87 per cent. Nearly the whole of this increase occurred in New England and the southern states, and was almost exactly divided between them. The figures which show the number and wages of officers and clerks have significance only as they complete the statistics which indicate the importance of the industry. The facts presented regarding the number and wages of operatives furnish material for some useful deductions.

It should be remarked here that in the spinning and weaving of cotton a very large proportion of the operatives are nominally employed on piecework. The payment of weavers by the "cut" is well-nigh universal, and a very large number of spinners are paid not by the day or the hour but by the number of spindles under their care. It was considered that if all who are employed according to this system were to be classed as pieceworkers the result would give an incomplete and erroneous view of the average earnings of operatives in cotton mills. Moreover, while these operatives are nominally employed as pieceworkers, their wages are in reality so regulated as to enable them to earn a nearly uniform amount from week to week. Consequently an arbitrary rule was adopted that all pieceworkers whose earnings are limited by the speed of machinery were to be included with those paid a specific amount by the week, the day, or the hour. It is probable that many manufacturers in making their returns failed to transfer to the category of wage earners according to the time employed all who should properly have been included in this class. The number of pieceworkers is therefore too large and that of operatives and skilled laborers earning wages is too small, but whatever error there may be corrects itself, and the final result is not affected.

Before taking up the details of the figures relating to the class of "operatives and skilled labor", a few comparisons may be drawn between the number of persons employed, exclusive of officers and clerks, in 1880 and 1890. The number of adult male employés increased 29,152 and of adult females 22,068, while the number of children decreased 4,888. The change in the relative proportion of these three classes in New England mills is marked; for while the number of men increased 18,228 that of women increased but 10,891, and the number of children decreased 7,539. In the southern states, on the other hand, while the number of men increased somewhat more than that of women, the number of children employed was doubled. The proportion of men, women, and children employed (including officers and clerks) in 1890 and 1880 is exhibited in the following table:

PROPORTION OF MEN, WOMEN, AND CHILDREN EMPLOYED (ALL CLASSES): 1890 AND 1880.

GEOGRAPHICAL DIVISIONS.	MEN. (Percentage of all employés.)		WOMEN. (Percentage of all employés.)		CHILDREN. (Percentage of all employés.)	
	1890	1880	1890	1880	1890	1880
United States	41.28	35.36	48.15	48.41	10.57	16.23
New England states	43.75	36.87	49.42	49.20	6.83	13.93
Middle states	37.32	32.29	50.25	46.49	12.43	21.22
Southern states	35.66	30.20	40.62	45.32	23.72	24.48
Western states	32.28	27.30	54.87	51.35	12.85	21.35

The most natural and obvious comparison between the rates of wages in 1880 and 1890 is the result of the general average. According to the census of 1880 there were employed in the cotton mills of the United States 172,544 hands (exclusive of officers and clerks), and the total wages paid to them amounted to $42,040,510. This was an average yearly earning of $243.65. In 1890 the same industry gave employment to 218,876 hands (officers and clerks excluded), and paid them $66,024,538 for their service, an annual average for each person of $301.65. This comparison, taken by itself and without explanation, would naturally be supposed to signify that the average rate of wages throughout the country in this industry has increased in the proportion indicated, that is, by an actual average addition of $58 to the wages of each person employed, more than $1 a week, or by 23.80 per cent. This deduction is not warranted by the facts. It is undeniable that wages have increased. This is proved beyond question by the wage tables of the mills. A glance at the table showing the proportion of men, women,

and children furnishes an abundant explanation of the reason why the apparent increase is greater than the real. It will be seen that the proportion of women employed in New England factories remained almost stationary, the difference between the two periods being only 0.22. The proportion of men increased 6.88 and that of children decreased 7.10. It thus appears that there is a decrease in the class of laborers earning the lowest rate of wages and an increase in the class earning the highest rate.

Turning attention now exclusively to the operatives and skilled laborers, excluding pieceworkers, we find that the sum of $30,761,249 was paid in wages during the census year to an average number of 80,735 adult males, being an average yearly earning of $381.02; $26,019,812 to 95,733 adult females, an average of $271.80, and $2,913,283 to 22,433 children, an average of $129.87 for the year. On the basis of 50 weeks running in each year this is an average weekly wage of $7.62 for men, $5.44 for women, and $2.60 for children. Although, counting each establishment as a unit, the average number of weeks during which all the cotton mills of the country were running appears to have been but slightly more than 49, yet, as a matter of history, the important mills all through the country were running almost continuously, and the basis of 50 weeks is under rather than over the truth. Bringing together the figures for each of the geographical divisions, we have the following exhibit:

GROSS WAGES AND AVERAGE EARNINGS PER YEAR AND PER WEEK OF SKILLED EMPLOYÉS, EXCLUDING PIECEWORKERS, 1890.

GEOGRAPHICAL DIVISIONS.	MEN.				WOMEN.				CHILDREN.			
	Average number.	Total wages.	Average earnings.		Average number.	Total wages.	Average earnings.		Average number.	Total wages.	Average earnings.	
			Yearly.	Weekly.			Yearly.	Weekly.			Yearly.	Weekly.
United States	80,735	$30,761,249	$381.02	$7.62	95,733	$26,019,812	$271.80	$5.44	22,433	$2,913,283	$129.87	$2.60
New England states	58,299	22,785,881	390.85	7.82	65,900	18,906,902	286.90	5.74	9,769	1,549,697	158.63	3.17
Middle states	10,555	4,582,850	434.19	8.68	14,567	4,193,627	287.89	5.76	3,971	536,363	135.07	2.70
Southern states	10,930	3,002,215	274.68	5.49	13,560	2,516,447	185.58	3.71	8,262	773,729	93.65	1.87
Western states	951	390,303	410.41	8.21	1,706	402,836	236.13	4.72	431	53,494	124.12	2.48

From these figures it appears that the highest average wages of both men and women are paid in the middle states, and the highest to children in New England, while the lowest wages to each of the three classes are paid in the southern states. An inspection of the table exhibiting the above facts by states shows that for all classes of working people the rates are more uniform throughout the New England states than in any other part of the country, a circumstance which will cause no surprise to those who know how highly organized factory labor is in the eastern states.

The bearing of the facts relative to actual rates of wages must necessarily be considered in connection with earnings in other branches of industry. In one respect the tables showing the number of employés, the amount of wages, and the number of spindles, when brought together, furnish the material for some useful deductions by manufacturers. It appears from the following table, first, that the number of spindles to each hand employed, taking the country at large, has increased in ten years from 61.74 to 64.82; secondly, that the cost of labor per spindle increased in the same time from $3.95 a year to $4.65. Furthermore, it appears that the number of spindles to each employé is largest in New England, as it was ten years ago, and that the cost of labor per spindle is also lowest in the same geographical division. This, of course, does not signify that wages are lowest in New England, for that is not true. No doubt both the fact now under notice and that just mentioned, which may be put in another form, namely, that fewer hands are required to each 1,000 spindles than elsewhere in the country, are due in some degree to the fact which has already been referred to under the head of "Cost of Plant", namely, that mills spinning and weaving coarse goods require more machinery other than spindles, and consequently more hands than fine mills. Indeed, something like a direct proportion may be established between the average number of yarn spun, for example, in Maine, Massachusetts, and South Carolina, and the number of spindles to each hand, as exhibited in the following table. The labor cost per spindle is complicated by differences in rates of wages and in hours of operation per day. The figures in the following table invite analysis by those who are curious to establish the relationships, and estimate the value of the several elements entering into questions of wages. In some special cases there are local variations which are to be explained on other grounds than any yet mentioned. The immense difference between the showing of New Jersey and that of Pennsylvania is to be ascribed chiefly to the fact that in New Jersey the dominating mills are those for the manufacture of spool cotton thread, while in Pennsylvania the number of spindles is comparatively small and that of looms abnormally large.

NUMBER OF SPINDLES TO EACH EMPLOYE, AND THE AMOUNT PAID FOR LABOR TO EACH SPINDLE: 1890 AND 1880.

STATES.		Average number of employés. (a)	Total wages. (a)	Spindles.	Number of spindles to each employé.	Labor cost per spindle.
The United States	1890	218,876	$66,024,538	14,188,103	64.82	$4.65
	1880	172,544	42,040,510	10,653,435	61.74	3.95
New England states	1890	147,350	47,832,943	10,836,155	73.54	4.41
	1880	125,779	32,170,861	8,632,087	68.63	3.73
Maine	1890	13,912	4,213,523	885,762	63.67	4.76
	1880	11,759	2,936,640	695,924	59.18	4.22
New Hampshire	1890	19,383	6,242,204	1,195,643	61.69	5.22
	1880	16,395	4,290,960	944,053	57.58	4.55
Vermont	1890	724	204,538	71,591	98.88	2.86
	1880	721	161,748	55,081	76.40	2.94
Massachusetts	1890	75,514	25,118,365	5,824,518	77.10	4.31
	1880	61,246	15,828,571	4,236,084	69.17	3.74
Rhode Island	1890	24,576	7,814,767	1,924,486	78.31	4.06
	1880	21,174	5,320,303	1,764,569	83.34	3.02
Connecticut	1890	13,220	4,239,546	934,155	70.65	4.54
	1880	14,484	3,632,639	936,376	64.65	3.88
Middle states	1890	31,841	10,184,589	1,633,722	51.31	6.23
	1880	28,118	6,613,260	1,391,164	49.48	4.75
New York	1890	8,316	2,448,031	606,796	72.97	4.03
	1880	9,227	1,994,755	561,658	60.87	3.55
New Jersey	1890	5,632	1,984,659	374,442	66.48	5.30
	1880	4,179	1,156,961	232,221	55.57	4.98
Pennsylvania	1890	12,666	4,388,017	439,638	34.71	9.98
	1880	9,879	2,502,688	425,391	43.06	5.88
Delaware	1890	971	308,346	53,916	55.53	5.72
	1880	791	192,727	46,188	58.39	4.17
Maryland	1890	4,256	1,055,536	158,930	37.34	6.64
	1880	4,042	766,129	125,706	31.10	6.09
Southern states	1890	36,415	7,116,865	1,554,000	42.67	4.58
	1880	16,317	2,750,986	542,048	33.22	5.08
Virginia	1890	1,990	373,993	94,294	47.38	3.97
	1880	1,085	169,789	44,340	40.87	3.83
North Carolina	1890	8,515	1,475,932	337,786	39.67	4.37
	1880	3,232	439,659	92,385	28.58	4.76
South Carolina	1890	8,071	1,510,494	332,784	41.23	4.54
	1880	2,018	380,844	82,334	40.80	4.63
Georgia	1890	10,314	2,167,036	445,452	43.19	4.86
	1880	6,215	1,135,184	198,656	31.96	5.71
Alabama	1890	2,088	402,908	79,234	37.95	5.09
	1880	1,448	239,998	49,432	34.14	4.86
Mississippi	1890	1,154	263,997	57,004	49.40	4.63
	1880	695	133,214	18,568	26.72	7.17
Kentucky	1890	818	170,573	42,942	52.50	3.97
	1880	348	63,850	9,022	25.93	7.08
Tennessee	1890	2,124	444,573	97,524	45.92	4.56
	1880	1,015	161,971	35,736	35.21	4.51
All other states	1890	1,341	307,359	66,980	49.95	4.59
	1880	261	27,377	11,575	44.35	2.37
Western states	1890	3,261	890,141	164,226	50.36	5.42
	1889	2,330	505,403	88,136	37.83	6.73
Ohio	1890	554	161,613	16,560	29.89	9.76
	1880	481	104,500	13,328	27.71	7.84
Indiana	1890	1,309	310,342	74,604	56.99	4.16
	1880	708	162,829	33,396	47.17	4.88
Illinois	1890	430	123,986	21,800	50.70	5.69
	1880					
Missouri	1890					
	1889	508	97,680	19,312	38.02	5.06
Wisconsin	1890	490	131,170	32,592	66.51	4.02
	1880					
All other states	1890	478	163,030	18,670	39.06	8.73
	1880	633	140,394	22,100	34.91	6.35

a Excludes officers or firm members, clerks or salesmen, and their salaries.

MATERIALS USED.

COTTON.

The total quantity of cotton consumed in the establishments reported was 2,261,600 bales, of an aggregate weight of 1,117,945,776 pounds. This includes foreign and sea island with the ordinary varieties of classified cotton. Inasmuch as the publication of a classified statement by states of the cotton consumed would result in the disclosure of certain facts regarding individual establishments, the totals only of the quantities and values of the several varieties of cotton can be here presented:

KINDS OF COTTON.	Bales.	Pounds.	Cost.
Total	2,261,600	1,117,945,776	$117,392,576
Sea island	21,283	7,891,915	1,980,983
Other domestic	2,231,385	1,103,492,910	114,337,802
Egyptian	8,932	6,560,951	1,073,791

The amount paid for cotton is by far the largest item in the expenditures of a cotton mill. The cost of that which is classed as "Other domestic" is 42.67 per cent of the gross value of products.

The average weight of bales of domestic cotton consumed in cotton mills during the census year was 494 pounds, as compared with 478 pounds in 1880. The commercial report of the weight of bales of the whole American crop in 1890 is 496.13 pounds. The increase in the consumption of cotton in the cotton mills of the United States during the ten years, including sea island and foreign cotton, is shown by the following figures:

YEARS.	Bales.	Pounds.
1889–1890	2,261,600	1,117,945,776
1879–1880	1,570,344	750,343,981
Increase in amount	691,256	367,601,795
Increase per cent	44.02	48.99

The total consumption of cotton in the country, including the consumption in woolen mills, for each of the eleven years ending with 1890 is exhibited in the following statement, taken from the accepted commercial reports, except that for the year 1890 the census figures are substituted. Owing to the variation in the weight of bales the amount is stated in pounds.

YEAR.	Pounds.	YEAR.	Pounds.
1880	792,400,000	1886	911,200,000
1881	847,200,000	1887	969,200,000
1882	878,800,000	1888	1,012,000,000
1883	950,000,000	1889	1,074,000,000
1884	897,600,000	1890	1,193,374,641
1885	763,600,000		

The table following presents the facts relative to the consumption of "other domestic" cotton in each of the states and by geographical divisions as ascertained at the Eleventh Census. A comparison is made with the corresponding figures obtained at the Tenth Census. It should be noted that the statistics of 1880 make no distinction between the several kinds of cotton, and consequently the comparison is not strictly between corresponding facts; but the error is a very small one, both because the use of foreign and sea island cotton is so small, comparatively, and because that use is, except in New Jersey, in states where the consumption of ordinary cotton is so great that the percentage can be affected but slightly.

QUANTITY AND COST OF COTTON CONSUMED, BY STATES: 1890 AND 1880.

STATES AND TERRITORIES.	1890							1880			
	Sea island and foreign.			Other domestic.				All cotton.			
	Bales.	Pounds.	Cost.	Bales.	Pounds.	Cost.	Cost per pound.	Bales.	Pounds.	Cost.	Cost per pound.
The United States	30,215	14,452,866	$3,054,774	2,231,385	1,103,492,910	$114,337,802	$0.1036	1,570,344	750,343,981	$86,945,725	$0.1159
New England states	20,321	9,899,494	2,065,270	1,405,637	794,792,220	74,683,860	0.1060	1,129,498	541,373,880	63,169,434	0.1167
Maine				132,504	65,717,252	7,053,168	0.1073	112,381	54,185,061	6,234,901	0.1151
New Hampshire				214,034	107,319,124	11,203,742	0.1044	157,673	76,386,499	8,629,063	0.1130
Vermont				8,954	4,647,889	498,348	0.1072	7,404	3,562,088	458,607	0.1287
Massachusetts	6,747	3,228,105	663,420	765,773	383,539,221	40,206,887	0.1048	574,857	273,718,889	31,107,154	0.1136
Rhode Island	6,733	3,426,367	700,925	186,558	94,555,788	10,446,155	0.1105	167,480	81,137,172	10,457,770	0.1289
Connecticut	6,841	3,245,022	700,925	97,814	49,012,946	5,275,560	0.1076	109,703	52,384,171	6,281,939	0.1199
Middle states	9,894	4,553,372	989,504	251,260	123,630,916	12,917,244	0.1045	228,729	109,321,428	13,258,526	0.1213
New York	653	483,368	78,560	78,171	39,038,689	4,192,105	0.1074	64,614	31,656,594	3,981,106	0.1258
New Jersey	9,241	4,070,004	910,944	16,482	8,231,147	905,524	0.1100	21,069	9,950,609	1,319,422	0.1326
Pennsylvania				92,705	44,629,588	4,371,693	0.0980	83,997	40,311,809	4,749,428	0.1178
Delaware				8,876	4,465,825	475,490	0.1065	7,512	3,236,184	427,855	0.1322
Maryland				55,026	27,265,667	2,972,432	0.1090	51,537	24,166,232	2,780,715	0.1151
Southern states				526,856	250,837,646	24,508,776	0.0977	182,349	84,528,757	8,890,408	0.1052
Virginia				22,731	10,616,206	1,080,773	0.1018	11,461	5,087,519	601,796	0.1183
North Carolina				114,371	53,546,289	5,396,974	0.1008	27,642	11,832,641	1,125,984	0.0952
South Carolina				133,342	64,000,600	6,242,598	0.0975	33,624	15,601,005	1,723,187	0.1105
Georgia				145,859	69,139,410	6,663,560	0.0964	71,389	33,757,199	3,591,554	0.1064
Florida								350	166,250	16,000	0.0962
Alabama				29,962	14,726,454	1,372,058	0.0932	14,702	7,271,791	729,202	0.1003
Louisiana								1,358	644,000	68,018	0.1056
Mississippi				17,366	8,449,834	793,600	0.0939	6,411	2,881,853	301,226	0.1045
Texas								246	119,986	11,280	0.0940
Kentucky				11,980	5,751,305	554,206	0.0964	4,050	1,882,234	188,856	0.1003
Arkansas								680	340,000	25,000	0.0735
Tennessee				33,114	15,779,360	1,554,851	0.0985	10,436	4,944,279	508,305	0.1028
All other states				18,131	8,828,188	850,156	0.0963				
Western states				47,632	24,232,128	2,227,922	0.0919	29,768	15,119,916	1,627,357	0.1076
Ohio				11,023	5,840,078	383,556	a0.0657	5,323	2,506,182	258,198	0.1030
Missouri								6,399	3,082,132	336,984	0.1093
Indiana				16,306	8,240,434	798,178	0.0969	11,558	6,364,887	679,911	0.1068
Michigan								600	300,000	36,000	0.1200
Illinois				6,405	3,267,188	312,621	0.0957	2,261	1,099,130	110,969	0.1010
Minnesota								400	200,000	22,000	0.1100
Wisconsin				6,924	3,470,388	359,117	0.1035	3,173	1,541,797	186,072	0.1168
Utah								54	25,788	3,223	0.1250
All other states				6,974	3,414,040	374,450	0.1097				

a The low cost per pound of cotton reported from the state of Ohio is caused by the inclusion of an establishment using a large quantity of "linter", or low grade cotton.

SEA ISLAND COTTON.

The consumption of sea island cotton during the census year is reported at 21,283 bales. This is much the largest amount ever consumed in a single year, and it exceeds the commercial reports by more than 2,000 bales, or nearly 10 per cent. There is, nevertheless, reason to believe that if there is an error in the present statement the correction required is an increase rather than a diminution of the amount. While a detailed statement of the consumption of this staple can not be made, for reasons already given, it may be said that mills in only four states return sea island cotton as entering into their raw materials—Connecticut, Massachusetts, New Jersey, and Rhode Island; and in these states the use of it is confined almost wholly to the makers of spool thread.

EGYPTIAN COTTON.

The amount of Egyptian cotton used in American mills is now reported by the census for the first time. For the census year 1890 it was 6,560,951 pounds. The return by the Bureau of Statistics of the Treasury Department of the imports of foreign cotton entering into consumption during the fiscal year 1889–1890 amounted to 8,407,160 pounds. It is not improbable that some users of foreign cotton failed to return the amount separately, but included the whole in their return of domestic. The use of Egyptian cotton in spinning fine yarns is increasing. The following table shows the amount of cotton imported from abroad and entering into consumption, together with the value of the same, as reported by the bureau of statistics for each of the ten years ended with 1890:

IMPORTS OF COTTON.

YEARS.	Pounds.	Value.
1881	4,440,996	$757,352
1882	4,339,776	789,944
1883	4,123,058	802,248
1884	7,093,915	1,382,514
1885	5,115,705	954,760
1886	5,072,359	672,508
1887	4,024,531	533,928
1888	5,497,544	744,795
1889	7,983,699	1,195,368
1890	8,407,160	1,393,071

FIBERS OTHER THAN COTTON.

The consumption of raw fibers other than cotton, as reported in the tables of materials, may be treated as unimportant. The use of such material is reported in an exceedingly small number of establishments, and both the quantity and value are too insignificant to be noticed at length. A similar remark may be made as to the yarns of fiber other than cotton, although the use of such materials was rather more important than the consumption of the raw fibers.

YARN PURCHASED.

The items representing amount and cost of cotton yarn not made in the mill where it is finally worked into fabrics, are worthy of more attention. As is well known, the spinning and the weaving industries are almost completely separated in Great Britain, where cotton manufacturing has reached its highest and largest development. In the United States the two industries are usually carried on by the same corporation and under one roof. The census returns do not give countenance to the theory, held by some persons, that a divorce of the two processes is impending. It is true there has been a considerable increase in the number of mills devoted exclusively to spinning, but no such increase appears in the number of weaving mills in which no spinning is done. A critical inspection of the returns shows what can not be exhibited in tabular statements, namely, that the users of yarn not spun by themselves are of three classes: (1) establishments which both spin and weave, but which spin too little for their loom capacity; (2) establishments which purchase fine yarns to be converted into sewing thread; and (3) establishments which weave only. These last are located mostly in the state of Pennsylvania, where a very considerable proportion of all the weaving of intricate and fancy fabrics is done. It will be seen by an examination of the table that Pennsylvania, with 3.10 per cent of the spindles in the country and 4.30 per cent of the looms, consumed 45.25 per cent of all the "yarn not made in mill" reported as material consumed.

OTHER MATERIALS.

The other items entering into the list of materials consumed call for but a single remark. With one exception they are expenditures upon the machinery which drives the mills. The exception is starch, a small amount of which is required to prepare warps for the loom. The weight of starch used in all the cotton mills in the country was but 27,448,792 pounds, while the weight of piece goods produced was 758,903,844 pounds. In other words, the total addition of weight to woven goods by the addition of starch was but 3.62 per cent, and this addition was merely that which is necessary to render the warp threads smooth and to give them the additional strength called for by the strain and wear of weaving.

DUPLICATIONS.

Attention should be directed to one fact relating to the table showing materials used, namely, that there is a certain duplication in some items, to be eliminated if any attempt is made to obtain the net amount and value of materials. It will be evident at a glance that substantially the whole of the "cotton yarn not made in mill" is a duplication as being the product of some of these very mills out of the cotton here reported. The total amount of yarn "not made in mill" is 49,457,669 pounds, valued at $11,363,218. Of this amount a total of 677,954 pounds, valued at $509,682, represents yarns of wool, flax, silk, jute, hemp, and other fibers, spun in other mills, and consumed in the manufacture of goods which are composed so largely of cotton that the makers of them do not class

them even as mixed goods. Although purchased cotton yarns used in weaving mills can not be traced to the spindles from which they came, it is reasonable to assume that most of the quantity coming under this head was the product of American mills and appears under the head of "Yarn" in the table of products. The importation of cotton yarns from abroad during the year ended June 30, 1890, was 1,674,262 pounds, valued at $879,326. What part of this quantity was yarn for doubling and twisting in sewing thread mills which do not spin all their own yarn, and what part of it was used in the weaving of mixed goods, can not be ascertained. The item of waste of other mills is also a duplication in the table of materials, but it calls for no explanation. In the table of products a part of the "yarn" item reappears in woven goods, particularly in upholstery goods, and in sewing cotton, while the rest was transferred to the woolen and silk industries or was consumed in the electrical and other arts. The whole of the item of waste reappears in batting, twine, rope, and "all other products".

PRODUCTS.

The products of the cotton mills of the United States may be classified under three heads: woven goods, yarns and thread, and miscellaneous products. The value of woven goods produced by the establishments reporting was $198,741,200, which was 74.16 per cent of the total; of warps, yarn, and sewing thread, $44,885,096, or 16.75 per cent; of all other products, $24,355,428, or 9.09 per cent. An examination of the tables in detail brings out the fact, which experience confirms, that an immense proportion of the goods consumed in the country is coarse and medium fabrics which are most durable and substantial for every-day wear. In the ascertainment of the quantities of the several classes of woven goods manufactured, the square yard was taken as the universal unit for all branches of the textile industry. The product of all the mills was reduced to this uniform standard. The advantage of this rule for statistical purposes is too obvious to require either explanation or argument, and the uselessness of statements showing the number of running yards of fabrics varying from the width of print cloths to that of broad sheetings is equally apparent. First in importance, both in quantity and value, among woven goods are brown and bleached sheetings and shirtings, which amounted to 962,238,062 square yards, valued at $55,193,439, averaging 5.74 cents a square yard in value at the mill. This is not only the most extensive but the most widely distributed branch of the cotton industry, while the goods themselves are those which are in most universal use, and which are adapted to the largest variety of purposes in household economy. The amount of print cloths, classed as "plain cloths for printing or converting" is but slightly below that of sheetings and shirtings, being 955,294,320 square yards; but the value, $43,550,174, is far below that of the leading class. The average value is 4.56 cents a square yard. The largest part, by far, of this product is printed, and becomes the calico of commerce. The census accounts for the printing of 722,257,451 square yards, or 75.61 per cent of the whole; but the goods printed were not drawn exclusively from the fabrics technically classed as print cloths. The relative importance of most of the other classes of woven goods calls for no detailed remarks, particularly as the materials do not exist for a comparison of the amounts produced in former years.

The classification of "fine and fancy woven fabrics" draws attention to the extent to which fine goods are now produced in the country, and gives a means of ascertaining the amount of such goods consumed. We find a total amount of 127,373,179 square yards, valued at $12,545,929, produced in domestic mills, which are thus returned at an average value of 9.85 cents a square yard. Among fine goods should also be classed a small, but not ascertainable, part of the ginghams manufactured in New England and Pennsylvania mills. Neglecting this small item we find that of the 3,002,761,037 square yards of woven goods produced in the country 4.24 per cent only in amount is classed as "fine or fancy woven", while in value these goods represent but 6.31 per cent of the total. During the fiscal year ended June 30, 1890, the entries at the custom houses of the country for consumption (including both direct entries and withdrawn from warehouse) of cotton cloth exceeding 200 threads to the square inch, counting warp and filling, amounted to 10,734,281 square yards, valued at $1,559,889. From the comparative insignificance of these numbers it appears that the proportion of fine woven goods is still less than 5 per cent of the total quantity of cotton cloth consumed and barely 7 per cent of the value. It also appears that while more than nine-tenths of the finer goods consumed are produced in the country, the average foreign value of those imported is fully one-half greater to the square yard than the value at the mill of the goods produced in this country which are classed as fine. This illustrates what experience teaches, that the finest goods used in the United States are still imported from abroad.

The manufacture of upholstery goods, which had a considerable development in the last decade, is chiefly remarkable for its localization. Of the whole value, $2,070,239, of these goods reported for the entire country, Pennsylvania returns all except a value of $162,900, divided between Massachusetts and New York, with a small amount in Wisconsin.

YARN MILLS.

The item of "yarns" has already been partially discussed under the head of materials, that is to say, so far as these yarns have been consumed in other mills classified as cotton, but there has been a large production of yarns which have become the material for other industries. They have been used as warps for worsted dress goods, also by the manufacturers of hosiery and knit goods, in the production of elastic fabrics, and for the covering of electric wires, an industry which has had an enormous development during recent years. The erection of mills for the production of yarn for these collateral uses is the leading feature in the extension of yarn production as a separate industry during the decade under review. It is comparatively easy to trace to their ultimate use most of the yarns which were not woven in the mills where they were produced. The establishments here reported produced 166,397,003 pounds of yarn for sale, and the importation during the year was 1,674,262 pounds, a total of 168,071,265 pounds. Of this amount 48,779,715 pounds were consumed in other cotton mills here reported, 83,624,868 pounds were consumed in woolen and hosiery industries, 4,338,789 pounds in silk industry, and 1,474,514 pounds in elastic fabric factories, an aggregate of 138,217,886 pounds, leaving only 29,853,379 pounds to be accounted for in the electrical and other industries not here mentioned.

SEWING COTTON—HISTORY OF THE INDUSTRY.

One of the most important branches of the cotton manufacture is the manufacture of sewing cotton. The quantity returned during the census year was 13,868,309 pounds, having an aggregate value of $11,637,500. Unfortunately, no trustworthy statistics are in existence showing the amount of production at any former period, except that in the census of 1870 the production of 11,560,241 dozens of spool cotton is reported; but there is no measure of comparison with the quantity now reported. This industry is one which has been established in the country in the face of much discouragement and of repeated failure. A century ago linen fabrics were much more common than fabrics of cotton, and linen thread was the ordinary material for sewing. When cotton thread was first introduced, it was a coarse and inferior article made of ordinary cotton, consisting of three cords twisted together, and was put up in skeins or in balls. There can be no doubt that cotton thread of this class was an early product of American spinning mills, although no record of its manufacture is preserved. The first introduction into this country of cotton thread upon wooden spools was in 1820, when the firm of John Clark, jr., & Co., founded at Glasgow, Scotland, in 1817, established an agency for the sale of such thread in New York. During the next twenty years other Scotch firms entered the market. The thread was of much better quality than that previously in use. It was composed of six strands of yarn, two of which were first twisted together in one direction, and then three of the double strands were twisted in the opposite direction. The result was a thread having much greater stability of twist than was possible for the earlier three-cord variety. Notwithstanding its superiority and the attractive form in which it was put up, which made it at once a favorite in the market, it was a long time before its position was so assured as to induce domestic manufacturers to undertake to produce it. There were several establishments in the United States which, in the years from 1840 to 1850, attempted to twist and spool their own thread for sewing purposes, but their efforts were confined to the production of three-cord thread, inferior in strength and finish, and the imperfections of their merchandise were covered by dyeing them in cheap colors. It was suited to some uses. For sewing thin and open woven fabrics, where the strain upon its strength and upon the stability of its twist was not too great, it answered the purpose. Not long before 1850 the Sagamore Company, of Portsmouth, New Hampshire, undertook to manufacture six-cord thread equal in quality to the standard imported thread, but the skill necessary for carding and spinning sea island cotton had not been attained, nor had the managers a mastery of the difficult and intricate processes of making six-cord thread. The enterprise was a failure and was abandoned. A few years later, about 1855, there was introduced into the country from England a three-cord thread known as a "glacé", or finished thread. Its polished surface, produced by mechanical means, made it really superior to any three-cord thread previously in the market, though still greatly inferior to the six-cord thread. The improvement drew the attention of such of the three-cord spool cotton manufacturers as had survived the discouragement attendant upon their efforts to compete with better goods. The first corporation that engaged in the enterprise of manufacturing glazed thread was the Willington Thread Company, of Willington, Connecticut, a small concern having less than a thousand spinning spindles. This company had already been in the business since 1843 or 1844. The competition of this company was, curiously enough, not with the strong and well made six-cord thread which was sold, but with the cheap and poor thread which was given, or "thrown in", and it finally made a breach in the custom of "throwing in" a spool of cotton with the dress pattern. The process of finishing the thread was patented and the Willington Company was licensed to make use of it. About this time the Willimantic Linen Company, of Willimantic, Connecticut, which had been engaged in the manufacture of coarse, unbleached linen fabrics and shoe thread, finding the business unsatisfactory, turned its attention to the production of sewing cotton, and secured all the rights under the patent for glazing thread except the rights under license held by the Willington Company. A year or two later the Willimantic Linen Company, which retained and still retains its original name, although it finally ceased the manufacture of linen when it began the manufacture of spool cotton,

purchased the plant of the Willington Thread Company. Before 1860 other finishing processes were invented and put in use by manufacturers in competition with the Willimantic Company. Glazed cotton was manufactured by the firm of Green & Daniels, of Pawtucket, Rhode Island, and by several other concerns of less note at Pawtucket and Fall River. At the time of the beginning of the civil war a substantial industry in this branch of spool cotton had been established. In 1860 Mr. Timothy Merrick, who had been manager of the Willington Mill, and later had been employed by the Willimantic Company, formed a partnership for the manufacture of "satin finish" thread, which subsequently grew into the Merrick Thread Company. The civil war gave a great impetus to the home manufacture of spool thread, both by the greatly increased demand and by the heavy duties laid on the imported article. Another influence was now operating to compel American manufacturers to make a fresh effort in the direction of the production of six-cord thread. The sewing machine had been invented. The three-cord thread of the time was neither strong enough nor in other ways good enough for machine use. The alternative was presented of supplying that which the change in the market demanded or of retiring from business. At the same time the foreign manufacturers who had obtained a reputation in the American market perceived that under the high duties upon manufactures it would be cheaper for them to produce their wares in the United States than to import them. In some cases they began by importing yarn spun in England to be twisted and spooled here; in other cases they introduced spinning at once. The period between 1860 and 1870 was one of not a little discouragement to the purely American manufacturer of six-cord thread. The chief experimenters were, besides the Willimantic Linen Company, the Merrick Thread Company, and the firm of Green & Daniels, already mentioned, the Hadley Company, of Holyoke, Massachusetts, and the Williston Mills, of Easthampton, Massachusetts. Experience shows that the users of sewing cotton are extremely conservative. It is difficult to persuade them to try a new make of thread when they are satisfied with that which they have been using. The obstacles encountered by manufacturers induced the most of them to abandon a hopeless struggle. Nevertheless some of them persevered, but of them all only the Willimantic Linen Company and the Merrick Thread Company succeeded in producing an article equal in all respects to the foreign brands, and finally established a position and a reputation. Meanwhile, three great British makers of thread transferred the production of their supply for the American market to this country. The first such venture was that of the Clark Thread Company, whose mills were erected at Newark, New Jersey and began operation in 1865. A little later the firm of J. & P. Coats, of Paisley, Scotland, established the manufacturing plant at Pawtucket, Rhode Island, known as the Conant Thread Company. Subsequently, in 1883, John Clark, jr., & Co., the first company to introduce six-cord thread into this country, erected the mills of the Clark Mile-end Cotton Company at Kearney, New Jersey. This completes the list of the large manufacturers of sewing cotton operating in the United States before 1890.

STATISTICS FOR 1890.

The following table gives the important facts relating to the sewing thread industry as ascertained at the Eleventh Census:

MANUFACTURE OF SEWING COTTON: 1890.

Number of establishments reporting product	34
Capital	$27,787,196
Amount of product (13,868,309 pounds)	$11,637,500
Number of spindles employed	679,484

EMPLOYÉS AND WAGES.

EMPLOYÉS AND WAGES.	Total.	Men.	Women.	Children.
Average number of employés	9,220	2,905	5,465	850
Total wages	$3,500,516	$1,571,278	$1,787,243	$141,995
Average annual earnings	$379.67	$540.89	$327.03	$167.05
Average weekly earnings (50 weeks in year).	$7.59	$10.82	$6.54	$3.34

PRINCIPAL MATERIALS USED.

KINDS OF COTTON.	Pounds.	Cost.
Total cotton consumed	21,272,349	$4,412,315
Sea island	7,026,334	1,780,186
Other domestic	7,561,910	863,102
Egyptian	4,011,445	654,226
Yarn purchased	2,672,660	1,114,801

An examination of these figures reveals some interesting facts. In the first place, it will be noticed that the average wages paid are much higher than in the cotton industry generally, and higher than those in the geographical divisions where wages are highest. Thus the average weekly wages of men, based on a year of 50 weeks, are $10.82 as compared with $8.68 for all cotton manufactures in the middle states, where the rate is highest. The average of women is $6.54 as compared with $5.76 for all women employed in cotton mills in the same section; and children's wages are $3.34 a week as compared with $3.17 in New England, where children receive the highest rates. Again, it may be observed that nearly all the sea island cotton and nearly two-thirds of the Egyptian consumed in the country are accounted for by the sewing cotton manufacture directly, while most of the remainder of both varieties is no doubt to be traced in the yarn purchased. In this last mentioned category, nevertheless, is to be found a considerable part of the imported yarn. There is a striking difference between the sewing cotton manufacture and the manufacture of cotton generally in the relations between cost of cotton, cost of labor, and value of products. Whereas, as shown on page 167, the cost of cotton represents 43.81 per cent of the value of products, it accounts for only 37.91 per cent of the selling value of spool cotton, although the average cost per pound of the cotton used is much higher than the price of ordinary cotton. This difference is partially accounted for by the large expenditure necessary for preparing the thread for market in attractive form. Labor, also, is not only more highly paid than in ordinary spinning mills, but labor as a whole forms 30.08 per cent of the total selling value of the product as against 25.93 per cent of the value of all cotton products. The difference, however, is not so marked when we compare the percentage of labor cost in sewing thread with the general returns for New England and the middle states, where most of the factories here under examination are located.

DYEING, BLEACHING, AND FINISHING.

The table which gives the facts relative to bleaching, dyeing, and printing cotton goods in spinning and weaving establishments is, in itself, an incomplete exhibit. In order to ascertain what part of the spun and woven product of the country was subjected to bleaching or coloring processes before entering into consumption it is necessary to include the operations of establishments exclusively devoted to these processes with those of establishments which finish their own goods. But the returns as they stand are interesting as showing the absence in this country of the specialization of industries that has been effected abroad. It is well known that in Europe spinning, weaving, bleaching, dyeing, and printing are five separate and distinct industries, any two of which are rarely carried on in the same establishment. While there are to be found in this country establishments in which but one of these industries is carried on, yet, as is remarked elsewhere, the ordinary custom is to combine two or more of them, and there are great corporations, some of the largest in the country, which perform all five of the processes. Indeed, it appears that more than one-fourth of all the dyeing and finishing of cotton goods was performed in mills operating spindles or looms, or both. The general table showing the amount and value of the processes as performed in cotton mills is useful only in completing the exhibits of these mills. The figures themselves furnish the basis for no important conclusions; but in combination with the returns obtained by Special Agent Peter T. Wood, "Dyeing and finishing textiles", they show the form in which goods reached the market.

It appears that there were produced in the United States during the year 955,294,320 square yards of "plain cloths for printing and converting", in other words, of "print cloths". There were printed in cotton mills 142,590,083 square yards, and in printing mills 579,667,368 square yards, a total of 722,257,451 square yards. Of these goods, which were not printed, and of other plain goods, 40,338,722 square yards were dyed in cotton mills, and 446,496,822 square yards were dyed in dyehouses, a total of 486,835,544 square yards of dyed cloth. In cotton mills 65,540,307 square yards and in bleacheries 454,357,758 square yards of cloth were bleached, a total of 519,898,065 square yards. The dyeing of yarn, 90,792,931 pounds in spinning mills and 48,762,759 pounds in dyehouses, 139,555,690 pounds in all, reappears for the most part in the ginghams, ticks, denims, stripes, and upholstery goods, though some of it represents colored sewing thread and yarn consumed in other ways than by weaving. We have this rough statement of the total production of cloth and of the amount bleached, dyed in the piece or the yarn, and printed:

	SQUARE YARDS.
Total production of woven goods	3,002,761,037
Printed	722,257,451
Dyed in the piece	486,835,544
Dyed in the yarn	436,118,141
Bleached	519,898,065
Total finished	2,165,109,201
Entered into consumption "in the gray"	837,651,836

In obtaining the facts relative to finishing processes, both in cotton mills and in separate establishments, the rule was adopted of obtaining the additional value given to goods by subjecting them to these processes. Thus a duplication of material and product, which is inevitable in the case of many manufacturing industries, was avoided, and an error is escaped which stands as a pitfall for the unwary when one attempts to ascertain the percentage of labor cost in a given product.

FINENESS OF GOODS—AVERAGE NUMBER OF YARN.

It is remarked, in that section of this report which refers to the products of manufacture, that by far the largest part of the goods turned out by the cotton mills of the country are the coarse and medium fabrics which are in ordinary use by all classes in the community. The lines between coarse and medium, and between medium and fine goods are, of course, vague and badly defined, but it is generally understood that yarns under No. 20 are coarse, and those over No. 40 are fine. The yarns which are woven into print cloths, of which the calico of commerce is made, are for the most part No. 28 for wraps and No. 36 for filling. The best standard sheetings and shirtings are spun from nearly the same numbers. It will thus be seen how large a proportion of the goods in common use are of no higher than medium grade. It may be well to define the meaning attached by manufacturers to the word "number" as applied to yarn. The quantity of yarn is expressed in hanks of 840 yards, and the "number" of the yarn is the number of hanks which weigh a pound troy. (*a*) Thus "No. 20" is yarn of which 20 hanks weigh 1 pound of 5,760 grains. 1 hank weighs 288 grains. A hank of No. 60 weighs 96 grains, or slightly more than one-fifth (0.2194) of an ounce avoirdupois; and it takes $8\frac{3}{4}$ yards of the same number to weigh 1 grain.

The earliest undertakings in this country, in the spinning of cotton, were for the production of coarse and medium goods, and progress has taken place in the direction both of coarse and of fine goods. The development of such great industries as the manufacture of duck is an example of the growth in one direction. Although in the number of square yards of product duck represents less than 2 per cent (1.84) of the whole amount of woven goods, yet it represents more than 5 per cent of the cotton consumed. The average number of yarn that is woven into duck is less than 10, that is, it is twice as coarse as that in the coarser grades of sheeting and three times as coarse as that in standard sheetings and print cloths. These last mentioned classes of fabrics are themselves an advance in fineness over the early products of American looms. In recent years there has been a marked tendency toward the manufacture of medium fine and very fine yarns and fabrics. Ordinarily each establishment devotes its machinery chiefly or wholly to the production of one general class of goods; that is to say, coarse, medium, or fine, but this rule has many exceptions, and there are a few cases of mills which produce so wide a range of yarns as to include No. 6 and No. 140. A simple average of the fineness of all the yarn spun in a city, a state, or the country, teaches very little that is useful, for the reason that a tendency in the direction of fineness may be wholly obliterated, in such an average, by the existence of a tendency in the other direction also. A large demand for duck at the same time that extensive mills were beginning the production of very fine goods would leave the "average number" substantially unchanged. Nevertheless such returns as have been obtained from the mills do show in a general way that the product of 1890 was yarn of higher counts than that of 1880, but to separate coarse from medium and medium from fine makes the exhibit of more value because less dependent upon an average of things essentially unlike each other.

Two methods of finding the average number of yarn are available. That which was pursued in ascertaining the number as reported by the special agent of the Tenth Census was based upon the spindle as a unit. The method may be best shown by a single example. In mill A there are 30,000 spindles producing yarn for print cloths, average No. 32; in mill B are 20,000 spindles producing yarn for duck, average No. 8; in mill C are 10,000 spindles producing yarn for fine ginghams, average No. 45. We have, then, this calculation:

MILLS.	Spindles.	Number.	Product
Total	60,000	.....	1,570,000
A.....	30,000	32	960,000
B	20,000	8	160,000
C	10,000	45	450,000

1,570,000 ÷ 60,000 = $26\frac{1}{6}$ average of the 3 mills.

This method seems faulty for two reasons. In the first place the spindles in one of the mills may be of the most modern pattern, having a speed of 9,000 to 10,000 turns a minute, while another mill may be filled with the antique machinery of the last generation, whose spindles turn not more than 6,000 times a minute and produce only two-thirds as much yarn per spindle as the new. It is obviously a mistake to average quantities which are stated in terms of units having different values. In the second place the average number of the yarn produced by a number of spindles, all of the same pattern and run at the same speed, spinning one-half No. 8 and one-half No. 32, is not No. 20. It is necessary to put more twist into fine yarn than into coarse. Indeed, the number of turns per inch increases rapidly as the fineness of the yarn increases. There is a twofold result of this fact: first, that spindles running on coarse yarn, which requires but a twist of ten turns per inch, can dispose of twice as much roving delivered to them from the rolls as other spindles run at the same speed upon yarn which requires

a The "number" of sewing cotton has the same basis. Before the introduction of six-cord spool thread "No. 40" sewing cotton was the thread made by twisting together 3 strands of "No. 40" yarn. In six-cord thread the yarn used is of double the fineness. Thus the thread to-day sold as No. 40 consists of 6 strands of No. 80 yarn.

twenty turns to the inch; and, second, inasmuch as there is more contraction where the twist is increased, the proportionate length of fine yarn spun is still further reduced. It will thus be seen that the average number as ascertained by the use of the spindle as a unit would be exceedingly misleading, even as between mills equipped with spindles of identical pattern and speed; and if to this confusion we add that which is inevitable when we are obtaining the average of mills using spindles of widely varying capacity, the uselessness of this method becomes evident. Nevertheless, since this was the only method available at the census of 1880, one calculation has been made on this basis for purposes of comparison.

The alternative method adopted for a second calculation of the average number seems certainly to show more accurately what it is required to find, namely, the average number of the yarn produced. In this calculation the unit adopted is the hank, a given length of yarn. This system is also best illustrated by an example: mill D produces 1,000,000 pounds of No. 28 yarn; mill E, 2,000,000 pounds of No. 10 yarn, and mill F 500,000 pounds of No. 50 yarn. We then have:

MILLS.	Pounds of yarn.	Number.	Hanks. (a)
Total	3,500,000		73,000,000
D	1,000,000	28	28,000,000
E	2,000,000	10	20,000,000
F	500,000	50	25,000,000

$73,000,000 \div 3,500,000 = 20\frac{8}{7}$, average number.

a It may be noted that the figures in this column do not, strictly speaking, show the number of hanks since the number of yarn is based upon the troy pound, whereas the yarn is reported in pounds avoirdupois. But the result of the calculation is not in the least affected by this difference.

The column headed "hanks" shows the actual relative lengths of the yarn spun of each of the numbers, and the final division gives the average number of the whole quantity.

Upon an examination of the table wherein are exhibited the average number of yarn as obtained at the Tenth Census and the number as ascertained by both methods at this census, it will be observed that the second method, based upon production of yarn, yields a lower average in the case of almost every state. The exceptions are without significance and need no explanation. What has already been said with reference to the former method of solution will indicate precisely why the average number is always lower by the second process. Spindles producing high counts not only consume less cotton each than those at work upon coarser yarn (this would make no difference in the average if the consumption were inversely proportioned to the number), but they produce less yarn in length, and therefore the true average of two spindles producing No. 10 and the other No. 20 is appreciably below No. 15.

Accepting for what it is worth the ascertainment of the average number using the spindle as a basis, we find that the spinning of 1890 was of greater average fineness in the country as a whole, in each of the geographical divisions, and in most of the states. There is apparently a slight falling off in three of the New England states, but in the case of two of them, Connecticut and Vermont, the appearance is evidently due to the fact that ten years ago the number was stated in integers. The small decline in New Hampshire is probably to be attributed wholly to the large predominance of a single great establishment. The average number is highest in New Jersey a result which is due entirely to the great relative importance of the sewing cotton industry in that state. While the comparative importance of this industry has increased during the last decade, yet the increase has certainly not been as great as appears, for the reason that the average number in 1880 must have been higher than is stated. New Jersey is also the state in which the widest divergence between the two statements of average number is observable, while Rhode Island is the state having a large number of spindles in which the difference is least. The explanation is obvious to those who study the reasons already given for the existence of any difference. In New Jersey, together with much fine spinning there is also not a little coarse spinning. In Rhode Island the range of numbers is smaller. It did not need the figures of the census to prove that there had been an advance in the south in the direction of fine spinning. If the progress seems to be less than might have been supposed, it may be that the method of ascertaining the number does not reveal the whole truth. It will be seen that the true average number in 1890 is higher than the computed number in 1880, which can be said neither of New England nor of the middle states.

While it can be successfully contended that the computation of the average number on the basis of pounds of yarn spun does show precisely what it purports to show, yet there is no doubt a way in which information of a far more useful character might be obtained. It is suggested that the combination of coarse, medium, and fine yarns results in a concealment of what it is really desirable to know, and that it would be well hereafter to divide yarn products into the several classes. The returns at the Eleventh Census show the weight of goods spun in each state of No. 20 yarn and under, of yarn between No. 20 and No. 40, and of yarn above No. 40, and while it is not possible to give the average number of yarn of each class the statement following will be useful for purposes of comparison.

WEIGHT OF SPUN PRODUCT, IN POUNDS

STATES.	No. 20 yarn and below.	Nos. 21 to 40.	Above No. 40.
The United States	480,273,239	386,723,173	34,845,826
New England states	207,672,353	331,611,339	34,800,452
Maine	26,577,650	28,385,603	.....
New Hampshire	54,984,891	36,182,517	.....
Vermont	1,243,508	2,508,883	.....
Massachusetts	103,234,514	186,750,241	18,812,519
Rhode Island	8,280,776	55,640,821	11,116,338
Connecticut	13,351,014	22,143,274	4,871,595
Middle states	62,850,759	40,139,655	45,374
New York	6,553,540	25,529,574	.....
New Jersey	1,456,672	4,631,593	45,374
Pennsylvania	32,215,744	8,023,174	.....
Delaware	2,325,960	1,502,278	.....
Maryland	20,298,843	453,036	.....
Southern states	197,443,432	12,543,916	.....
Virginia	7,719,379	.....	.....
North Carolina	41,972,080	3,076,558	.....
South Carolina	53,275,593	1,244,770	.....
Georgia	52,611,129	6,221,249	.....
Alabama	11,699,255	.....	.....
Mississippi	6,966,959	.....	.....
Kentucky	2,246,776	2,001,339	.....
Tennessee	12,310,343	.....	.....
All other (*a*)	8,641,918	.....	.....
Western states	12,306,695	2,428,263	.....
Ohio	1,425,000	.....	.....
Indiana	6,649,187	.....	.....
Illinois	950,000	1,424,131	.....
Wisconsin	1,678,474	1,004,132	.....
All other (*a*)	1,604,034	.....	.....

a Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments were distributed as follows: southern states—Louisiana, 2; Texas, 1; Arkansas, 2; western states—California, 1; Iowa, 1; Missouri, 1.

In considering the following tables presenting the statistics of cotton manufacture, reference should be made to the general remarks on manufactures, also to the text and tables on the combined textile industries that precede this report.

Table 1 presents for the purpose of convenient comparison the statistics relating to cotton manufacture as reported at different census periods. The table comprises all the items of the inquiry common to a number of such periods and the statistics are given for each decennial year from 1840 to 1890, both inclusive.

Table 2 is a statement in detail for 1890 showing each item of the schedule of inquiry, excepting details relating to employés and wages, by totals for the United States, for geographical groups of states, and for each state.

Table 3 is a presentation of employés and wages for the cotton industry considered in its entirety. It shows by totals for each state and for the United States, the average number of men, women, and children distributed into the following classes: (1) officers or firm members actively engaged in the industry or in supervision; (2) clerks; (3) operatives and skilled labor; (4) unskilled labor; (5) pieceworkers. The average number of weeks employed, the average weekly earnings per employé, and the total wages are shown for men, women, and children, in each class, excepting pieceworkers. The statement for pieceworkers gives the average number of men, women, and children, respectively, and the total wages reported for each.

Table 4 shows the average number of men, women, and children, respectively, employed at each weekly rate of pay, by totals for each state, and for the United States.

TABLE 1.—COMPARATIVE STATEMENT FOR THE UNITED STATES, BY

	STATES AND TERRITORIES.	Number of establishments.	Capital. (a)	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.		
				Aggregates.		Males above 16 years.
				Average number.	Total wages.	
	United States:					
1	1840	1,240	$51,102,359	72,119		
2	1850	1,094	74,500,931	92,286		33,150
3	1860	1,091	98,585,269	122,028	$23,940,108	46,859
4	1870	956	140,706,291	135,369	39,044,132	42,790
5	1880	756	208,280,346	b174,659	42,040,510	61,760
6	1890	905	354,020,843	221,585	09,489,272	91,464
	New England states:					
7	1840	674	34,931,399	46,834		
8	1850	564	53,832,430	61,893		20,745
9	1860	570	69,260,279	81,403	16,720,920	29,886
10	1870	508	100,103,770	94,775	28,740,788	30,203
11	1880	439	156,754,690	127,185	32,170,861	46,897
12	1890	402	243,153,249	148,718	49,908,591	65,057
	Maine:					
13	1840	6	1,398,000	1,414		
14	1850	12	3,329,700	3,739		780
15	1860	19	6,018,325	6,764	1,368,888	1,828
16	1870	23	9,839,685	9,439	2,565,197	2,606
17	1880	24	15,292,078	11,864	2,936,640	3,962
18	1890	23	20,850,754	13,992	4,372,473	5,273
	New Hampshire:					
19	1840	58	5,523,200	6,991		
20	1850	44	10,950,500	12,122		2,911
21	1860	44	12,586,880	12,730	2,883,804	3,829
22	1870	36	13,332,710	12,542	3,989,853	3,752
23	1880	36	19,877,084	16,529	4,290,960	5,235
24	1890	27	26,801,933	19,533	6,429,084	290
	Vermont:					
25	1840	7	118,100	262		
26	1850	9	202,500	241		94
27	1860	8	271,200	379	78,468	157
28	1870	8	670,000	451	125,000	125
29	1880	7	936,096	735	161,748	214
30	1890	6	1,431,986	737	220,742	338
	Massachusetts:					
31	1840	278	17,414,099	20,928		
32	1850	213	28,455,630	28,730		9,293
33	1860	217	33,704,674	38,451	7,798,476	13,691
34	1870	191	44,714,375	43,512	13,589,305	13,694
35	1880	175	72,291,601	61,844	15,828,571	22,774
36	1890	187	128,838,837	76,213	26,230,667	33,730
	Rhode Island:					
37	1840	209	7,326,000	12,086		
38	1850	158	6,675,000	10,875		4,959
39	1860	153	10,052,200	14,077	2,847,804	6,353
40	1870	139	18,836,300	16,745	5,224,650	5,583
41	1880	115	28,047,331	21,474	5,320,303	8,344
42	1890	94	38,798,161	24,832	8,131,142	10,761
	Connecticut:					
43	1840	116	3,152,000	5,153		
44	1850	128	4,219,100	6,186		2,708
45	1860	129	6,627,000	9,002	1,743,480	4,028
46	1870	111	12,710,700	12,086	3,246,783	4,443
47	1880	82	20,310,500	14,739	3,632,639	6,368
48	1890	65	26,431,578	13,411	4,524,483	6,665
	Middle states:					
49	1840	298	11,583,882	18,187		
50	1850	352	12,970,445	19,699		8,274
51	1860	340	18,789,069	29,078	5,464,772	12,212
52	1870	274	27,723,306	28,974	7,994,470	8,466
53	1880	139	31,014,759	28,367	6,613,260	9,161
54	1890	239	51,676,249	32,344	10,763,873	12,070
	New York:					
55	1840	117	4,900,772	7,407		
56	1850	86	4,176,920	6,320		2,632
57	1860	79	5,383,479	7,659	1,405,292	3,107
58	1870	81	8,511,336	9,144	2,626,131	2,608
59	1880	36	11,399,638	9,305	1,994,755	3,012
60	1890	42	13,290,745	8,401	2,563,730	3,331
	New Jersey:					
61	1840	43	1,722,810	2,408		
62	1850	21	1,483,500	1,712		616
63	1860	44	1,320,550	2,534	468,336	1,010
64	1870	27	2,762,000	3,514	1,009,351	1,086
65	1880	17	3,807,750	4,222	1,156,961	1,223
66	1890	17	13,519,972	5,683	2,054,282	1,872

a Value of hired property is not included in the capital reported in 1890, because it was not included in the reports of previous census years.

GEOGRAPHICAL DIVISIONS AND STATES AND TERRITORIES: 1840–1890.

AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES—continued.		MACHINERY.		MATERIALS USED.				Value of products.	
Females above 15 years.	Children.	Spindles.	Looms.	Total cost.	Cotton consumed.				
					Bales.	Pounds.	Cost.		
		2,284,631						$46,350,453	1
59,136				$34,835,056	641,240			61,869,184	2
75,169		5,235,727	126,313	57,285,534		422,704,975		115,681,774	3
69,637	22,942	7,132,415	157,310	111,736,936		398,308,257		177,489,739	4
84,558	28,341	10,653,435	225,759	102,206,347	1,570,344	750,343,981	$86,945,725	192,090,110	5
106,689	23,432	14,188,103	324,866	154,912,979	2,261,600	1,117,945,776	117,392,576	267,981,724	6
		1,597,394						31,611,880	7
41,148				23,800,904	430,603			42,040,178	8
51,517		3,858,962	93,344	37,670,782		283,701,306		79,359,900	9
50,805	13,767	5,498,308	114,982	78,816,481		275,625,278		124,959,053	10
62,568	17,720	8,632,087	184,701	74,290,026	1,129,498	541,373,880	63,169,434	143,363,030	11
73,496	10,165	10,836,155	250,116	101,101,446	1,425,958	714,691,714	76,749,130	181,112,453	12
		29,736						970,397	13
2,959				1,573,110	31,531			2,596,356	14
4,936		281,056	6,877	3,319,335		23,733,165		6,235,623	15
6,246	587	459,772	9,902	6,746,780		25,887,771		11,844,181	16
6,481	1,421	695,924	15,971	7,320,152	112,381	54,185,061	6,234,901	13,319,363	17
7,856	863	885,762	21,825	8,446,736	132,504	65,717,252	7,053,168	15,316,909	18
		195,173						4,142,304	19
9,211				4,839,429	83,026			8,830,619	20
8,901		636,788	17,336	7,128,196		51,002,324		13,699,994	21
7,490	1,300	749,843	19,091	12,318,867		41,469,719		16,999,672	22
9,596	1,698	944,053	24,299	10,146,904	157,673	76,386,499	8,629,063	17,953,403	23
0,349	894	1,195,643	31,850	12,962,939	214,034	107,319,124	11,203,742	21,958,002	24
		7,254						113,000	25
147				114,415	2,243			196,100	26
222		17,600	362	181,030		1,447,250		357,450	27
242	84	28,768	628	292,269		1,235,652		546,510	28
350	171	55,081	1,180	508,297	7,404	3,562,088	458,607	855,864	29
309	90	71,591	1,175	542,065	8,954	4,647,889	498,348	914,685	30
		665,095						16,553,423	31
19,437				11,289,309	223,607			19,712,461	32
24,760		1,673,498	42,779	17,214,592		134,012,759		38,004,255	33
24,065	5,753	2,619,541	55,343	37,371,599		130,654,040		59,493,153	34
31,497	7,573	4,236,084	95,321	35,994,109	574,857	273,718,889	31,107,154	72,289,518	35
38,392	4,091	5,824,518	133,227	56,586,283	772,520	386,767,326	40,870,307	100,202,882	36
		518,817						7,116,792	37
5,916				3,484,579	50,713			6,447,120	38
7,724		814,554	17,315	5,799,223		41,614,797		12,151,191	39
8,028	3,134	1,043,242	18,075	13,268,315		44,630,787		22,049,203	40
9,199	3,931	1,764,569	29,669	12,291,437	167,480	81,137,172	10,457,770	22,875,111	41
10,889	3,182	1,924,486	43,106	14,347,672	193,291	97,982,155	11,147,080	27,310,499	42
		181,319						2,715,964	43
3,478				2,500,062	39,483			4,257,522	44
4,974		435,466	8,675	4,028,406		31,891,011		8,911,387	45
4,734	2,909	597,142	11,943	8,818,651		31,747,309		14,026,334	46
5,445	2,926	936,376	18,261	8,029,127	109,703	52,384,171	6,281,939	16,069,771	47
5,701	1,045	934,155	18,933	8,215,751	104,655	52,257,968	5,976,485	15,409,476	48
		487,571						12,222,200	49
11,425				7,349,795	125,392			12,782,718	50
16,866		1,042,480	25,185	13,928,671		87,113,715		26,534,700	51
14,126	6,382	1,246,045	34,974	23,793,595		80,937,966		38,597,765	52
13,188	6,018	1,391,164	27,318	16,191,758	228,729	109,321,428	13,258,526	29,389,286	53
16,253	4,021	1,633,722	35,074	23,044,093	261,154	128,184,288	13,906,748	40,664,476	54
		211,659						3,640,237	55
3,688				1,985,973	37,778			3,591,989	56
4,552		348,584	7,885	3,061,105		23,945,627		6,676,878	57
4,546	1,990	492,573	17,218	6,990,626		24,783,351		11,178,211	58
4,201	2,092	561,658	12,403	4,652,745	64,614	31,656,594	3,981,106	8,266,836	59
4,034	1,036	606,796	13,466	5,564,251	78,824	39,522,057	4,270,665	9,777,295	60
		63,744						2,086,104	61
1,096				666,645	14,437			1,109,524	62
1,524		123,548	1,567	1,165,435		9,094,649		2,217,728	63
1,745	683	200,580	2,176	1,964,758		7,920,035		4,015,768	64
2,291	708	232,221	3,180	2,018,175	21,069	9,950,609	1,319,422	4,548,275	65
3,398	413	374,442	3,673	3,028,933	25,723	12,301,151	1,816,468	5,902,615	66

b Includes 2,115 officers and clerks for whom no wages are reported.

TABLE I.—COMPARATIVE STATEMENT FOR THE UNITED STATES, BY

	STATES AND TERRITORIES.	Number of establishments.	Capital.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.		
				Aggregates.		Males above 16 years.
				Average number.	Total wages.	
	Pennsylvania:					
1	1840	106	$3,325,400	5,522		
2	1850	208	4,528,925	7,663		3,564
3	1860	185	9,203,040	14,994	$2,768,340	6,412
4	1870	138	12,550,720	12,730	3,496,986	3,859
5	1880	50	10,331,985	9,957	2,502,688	3,413
6	1890	158	15,884,936	12,960	4,687,088	5,280
	Delaware:					
7	1840	11	330,500	566		
8	1850	12	460,100	838		413
9	1860	11	582,500	1,109	220,224	520
10	1870	6	1,165,000	726	190,069	225
11	1880	8	874,570	797	192,727	243
12	1890	7	1,683,803	987	324,328	282
	Maryland: (a)					
13	1840	21	1,304,400	2,284		
14	1850	24	2,236,600	3,022		1,008
15	1860	20	2,254,500	2,687	582,780	1,093
16	1870	22	2,734,250	2,860	671,933	688
17	1880	19	4,600,816	4,086	766,129	1,270
18	1890	15	7,296,793	4,313	1,134,445	1,305
	District of Columbia: (a)					
19	1840					
20	1850	1	85,000	144		41
21	1860	1	45,000	95	19,800	70
22	1870					
23	1880					
24	1890					
	Southern states:					
25	1840	248	4,331,078	6,642		
26	1850	166	7,256,056	10,043		3,886
27	1860	165	9,840,221	10,152	1,481,704	4,113
28	1870	151	11,088,315	10,175	1,929,779	3,640
29	1880	161	17,375,807	16,741	2,750,986	5,056
30	1890	239	53,827,303	37,168	7,817,069	13,254
	Virginia:					
31	1840	22	1,299,020	1,816		
32	1850	27	1,908,900	2,963		1,275
33	1860	16	1,367,543	1,441	260,856	694
34	1870	11	1,128,000	1,741	229,750	921
35	1880	8	1,190,100	1,112	169,789	301
36	1890	9	2,966,889	2,019	406,824	592
	North Carolina:					
37	1840	25	995,300	1,219		
38	1850	28	1,058,800	1,619		442
39	1860	39	1,272,750	1,755	189,744	440
40	1870	33	1,030,000	1,453	182,951	258
41	1880	49	2,855,800	3,343	439,659	875
42	1890	91	10,775,134	8,742	1,646,196	3,014
	South Carolina:					
43	1840	15	617,450	570		
44	1850	18	857,200	1,019		399
45	1860	17	801,825	891	123,300	342
46	1870	12	1,337,000	1,123	257,680	289
47	1880	14	2,776,100	2,053	380,844	606
48	1890	34	11,141,833	8,192	1,646,574	2,965
	Georgia:					
49	1840	19	573,835	779		
50	1850	35	1,736,156	2,272		873
51	1860	33	2,126,103	2,813	415,332	1,131
52	1870	34	3,433,265	2,846	611,868	1,147
53	1880	40	6,348,657	6,349	1,135,184	1,987
54	1890	53	17,664,675	10,530	2,366,085	4,061
	Florida.					
55	1840					
56	1850	(b)	80,000	95		28
57	1860	1	30,000	65	7,872	40
58	1870					
59	1880	1	11,000	33	5,000	21
60	1890					
	Alabama:					
61	1840	14	35,575	82		
62	1850	12	651,900	715		346
63	1860	14	1,316,000	1,312	198,408	543
64	1870	13	931,000	1,032	216,679	303
65	1880	16	1,246,500	1,490	239,998	426
66	1890	13	2,853,015	2,137	447,173	783

a Maryland and the District of Columbia are classed in this table as m iddle states for purposes of comparison.

GEOGRAPHICAL DIVISIONS AND STATES AND TERRITORIES: 1840–1890—Continued.

AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES—continued.		MACHINERY.		MATERIALS USED.					
Females above 15 years.	Children.	Spindles.	Looms.	Total cost.	Cotton consumed.			Value of products.	
					Bales.	Pounds.	Cost.		
		146,494						$5,013,007	1
4,099				$3,152,530	44,162			5,322,262	2
8,582		476,979	12,994	7,386,213		37,496,203		13,650,114	3
6,097	2,774	434,246	12,862	10,724,052		32,953,318		17,490,080	4
4,457	2,087	425,391	8,488	6,105,700	83,997	40,311,809	$4,749,428	11,021,054	5
6,263	1,417	439,638	13,974	10,485,247	92,705	44,629,588	4,371,693	18,431,773	6
		24,492						332,272	7
425				312,068	4,730			538,439	8
589		38,974	986	570,102		3,403,000		941,703	9
286	215	29,534	771	704,733		2,587,615		1,060,898	10
362	192	46,188	822	527,205	7,512	3,236,184	427,855	871,007	11
488	217	53,916	996	587,646	8,876	4,465,825	475,490	1,095,001	12
		41,182						1,150,580	13
2,014				1,165,579	23,325			2,120,504	14
1,594		51,835	1,670	1,698,413		12,880,119		2,973,877	15
1,452	720	89,112	1,947	3,409,426		12,693,647		4,852,808	16
1,877	939	125,706	2,425	2,887,933	51,537	24,166,232	2,780,715	4,682,114	17
2,070	938	158,930	2,965	3,378,016	55,026	27,265,067	2,972,432	5,457,792	18
									19
103				67,000	960			100,000	20
25		2,560	83	47,403		294,117		74,400	21
									22
									23
									24
		180,927						2,241,595	25
6,157				3,332,631	78,140			6,464,488	26
6,039		298,551	6,789	4,954,126		45,786,510		8,460,337	27
4,190	2,343	327,871	6,256	7,419,010		34,351,195		11,372,186	28
7,587	4,098	542,048	11,898	9,999,145	182,349	84,528,757	8,890,408	16,356,598	29
15,099	8,815	1,554,000	36,266	27,764,055	526,856	250,837,646	24,508,776	41,513,711	30
		42,262						446,063	31
1,688				828,375	17,785			1,486,384	32
747		49,440	2,160	811,187		7,544,297		1,489,971	33
507	313	77,116	1,310	937,820		4,255,383		1,435,800	34
530	281	44,340	1,322	640,391	11,461	5,087,519	601,796	1,040,962	35
951	476	94,294	2,517	1,199,578	22,731	10,616,206	1,080,773	1,732,648	36
		47,934						438,900	37
1,177				531,903	13,617			831,342	38
1,315		41,884	761	622,363		5,540,738		1,046,047	39
916	279	39,897	618	963,809		4,238,276		1,345,052	40
1,727	741	92,385	1,790	1,463,645	27,642	11,832,641	1,125,984	2,554,482	41
3,657	2,071	337,786	7,254	6,239,902	114,371	53,546,289	5,396,974	9,563,443	42
		16,355						359,000	43
620				295,971	9,929			748,338	44
549		30,890	525	431,525		3,978,061		713,050	45
508	326	34,940	745	761,469		4,756,823		1,529,937	46
772	585	82,334	1,676	1,808,300	33,624	15,601,005	1,723,187	2,895,769	47
3,075	2,152	332,784	8,546	6,819,320	133,342	64,000,600	6,242,598	9,800,798	48
		42,589						304,342	49
1,399				900,419	20,230			2,135,044	50
1,682		85,186	2,041	1,466,375		13,907,904		2,371,207	51
1,080	619	85,602	1,887	2,504,758		10,921,176		3,648,973	52
2,951	1,411	198,656	4,493	4,019,673	71,389	33,757,199	3,591,554	6,481,894	53
4,009	2,460	445,452	10,459	7,832,230	145,859	69,139,410	6,663,560	12,035,629	54
									55
67				30,000	600			49,920	56
25		1,600	20	23,600		200,000		40,000	57
									58
2	10	816		18,095	350	166,250	16,000	25,000	59
									60
		1,502						17,547	61
369				237,081	5,208			382,260	62
769		35,740	623	617,633		5,246,800		1,040,147	63
445	284	28,046	632	764,965		3,249,523		1,088,767	64
631	433	49,432	863	783,711	14,702	7,271,791	729,202	1,228,019	65
853	501	79,234	1,692	1,459,048	29,962	14,726,454	1,372,058	2,190,771	66

b The number of establishments not given for Florida in 1850.

TABLE 1.—COMPARATIVE STATEMENT FOR THE UNITED STATES, BY

	STATES AND TERRITORIES.	Number of establishments.	Capital.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.		
				Aggregates.		Males above 16 years.
				Average number.	Total wages.	
	Mississippi:					
1	1840	53	$6,420	81	.....	.....
2	1850	2	38,000	36	.....	19
3	1860	4	230,000	215	$36,264	106
4	1870	5	751,500	265	61,833	78
5	1880	8	1,122,140	722	133,214	203
6	1890	9	2,053,743	1,184	290,981	480
	Louisiana:					
7	1840	2	22,000	23	.....	.....
8	1850	.....	.....	.....	.....	.....
9	1860	2	1,000,000	360	49,440	220
10	1870	4	592,000	246	60,600	123
11	1880	2	195,000	108	12,572	43
12	1890 (a)	.....	.....	.....	.....	.....
	Texas:					
13	1840	.....	.....	.....	.....	.....
14	1850	.....	.....	.....	.....	.....
15	1860	1	450,000	130	15,600	130
16	1870	4	496,000	291	68,211	184
17	1880	2	50,000	71	2,466	45
18	1890 (a)	.....	.....	.....	.....	.....
	Arkansas:					
19	1840	2	2,125	7	.....	.....
20	1850	3	16,500	31	.....	13
21	1860	2	37,000	25	4,428	14
22	1870	2	13,000	17	4,100	8
23	1880	2	75,000	64	7,339	20
24	1890 (a)	.....	.....	.....	.....	.....
	Kentucky:					
25	1840	58	316,113	523	.....	.....
26	1850	8	239,000	402	.....	181
27	1860	6	244,000	246	41,280	130
28	1870	5	405,000	269	57,951	77
29	1880	3	360,000	352	63,850	128
30	1890	5	1,376,132	834	189,039	284
	Tennessee:					
31	1840	38	463,240	1,542	.....	.....
32	1850	33	669,600	891	.....	310
33	1860	30	965,000	899	139,180	323
34	1870	28	970,650	890	178,156	252
35	1880	16	1,145,600	1,044	161,071	311
36	1890	20	2,928,657	2,174	495,438	717
	All other southern states:					
37	1890 (a)	5	2,067,225	1,356	328,759	358
	Western states:					
38	1840	20	256,000	456	.....	.....
39	1850	12	442,000	651	.....	245
40	1860	16	695,700	1,395	272,712	648
41	1870	23	1,790,900	1,447	379,095	481
42	1880	17	3,135,000	2,366	505,403	646
43	1890	25	5,364,042	3,355	999,739	1,083
	Ohio:					
44	1840	8	113,500	246	.....	.....
45	1850	8	297,000	401	.....	132
46	1860	8	265,000	840	151,164	372
47	1870	7	555,700	462	113,520	216
48	1880	4	670,000	484	104,500	126
49	1890	7	1,213,217	584	193,757	264
	Michigan:					
50	1840	.....	.....	.....	.....	.....
51	1850	.....	.....	.....	.....	.....
52	1860	.....	.....	.....	.....	.....
53	1870	.....	.....	.....	.....	.....
54	1880	1	20,000	88	16,800	36
55	1890	.....	.....	.....	.....	.....
	Indiana:					
56	1840	12	142,500	210	.....	.....
57	1850	2	43,000	95	.....	38
58	1860	2	251,000	367	84,888	177
59	1870	4	551,500	504	113,200	119
60	1880	4	1,090,000	720	162,829	205
61	1890	6	1,744,720	1,325	332,676	341
	Illinois:					
62	1840	.....	.....	.....	.....	.....
63	1850	.....	.....	.....	.....	.....
64	1860	3	4,700	11	2,640	10
65	1870	5	151,000	98	25,500	26
66	1880	2	240,000	297	47,885	66
67	1890	4	766,405	454	150,386	135

a Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Arkansas, 2; Louisiana, 2; Texas, 1.

GEOGRAPHICAL DIVISIONS AND STATES AND TERRITORIES: 1840–1890—Continued.

AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES—continued.		MACHINERY.		MATERIALS USED.				Value of products.	
					Cotton consumed.				
Females above 15 years.	Children.	Spindles.	Looms.	Total cost.	Bales.	Pounds.	Cost.		
		318						$1,744	1
17				$21,500	430			30,500	2
109		6,344	90	79,800		698,800		176,328	3
88	99	3,526	152	123,568		580,764		234,445	4
313	206	18,568	644	337,149	6,411	2,881,853	$301,226	679,093	5
398	306	57,004	1,352	871,970	17,366	8,449,834	793,600	1,333,398	6
		706						18,900	7
									8
140		6,725	150	226,600		1,995,700		466,500	9
57	66	13,084	292	161,485		748,525		251,550	10
41	24	6,096	120	72,470	1,358	644,000	68,018	86,776	11
									12
									13
									14
		2,700	100	64,140		588,000		80,695	15
52	55	8,878	235	216,519		1,077,118		374,598	16
10	16	2,648	71	14,827	246	119,986	11,280	21,600	17
									18
		90							19
18				8,975	170			16,637	20
11				11,600		187,500		23,000	21
3	6	1,125		13,780		66,400		22,562	22
17	27	2,015	28	33,305	680	340,000	25,000	50,000	23
									24
		12,358						329,380	25
221				180,907	3,760			273,439	26
116		8,192	76	214,755		1,826,000		315,270	27
71	121	7,734	72	375,048		1,584,625		498,960	28
01	133	9,022	73	253,818	4,050	1,882,234	188,856	418,286	29
372	178	42,942	677	643,949	11,980	5,751,305	554,206	1,000,668	30
		16,813						325,719	31
581				297,500	6,411			510,624	32
576		29,850	243	384,548		4,072,710		698,122	33
463	175	27,923	313	595,789		2,872,582		941,542	34
502	231	35,736	818	553,761	10,436	4,944,279	508,305	874,717	35
1,000	457	97,524	2,043	1,765,162	33,114	15,779,360	1,554,851	2,507,719	36
784	214	66,980	1,726	932,896	18,131	8,828,188	850,156	1,348,637	37
		18,739						274,778	38
406				351,726	7,105			581,890	39
747		35,734	995	731,955		6,103,444		1,326,837	40
516	450	60,191	1,098	1,707,850		7,393,818		2,560,735	41
1,215	505	88,136	1,842	1,725,418	29,768	15,119,916	1,627,357	2,981,196	42
1,841	431	164,226	3,410	3,003,385	47,632	24,232,128	2,227,922	4,691,084	43
		13,754						139,378	44
269				237,060	4,270			394,700	45
468		19,664	540	374,100		3,192,500		723,500	46
147	99	23,240	208	493,704		2,226,400		681,835	47
321	37	13,328	42	286,092	5,323	2,506,182	258,198	637,000	48
313	7	16,560	40	903,446	11,023	5,840,078	383,556	1,468,204	49
									50
									51
									52
									53
38	14	5,100	131	41,000	600	300,000	36,000	70,000	54
									55
		4,985						135,400	56
57				28,220	675			44,200	57
190		11,000	375	229,925		1,813,944		344,350	58
179	206	17,360	448	542,875		2,070,318		778,047	59
391	124	33,396	776	[b]651,434	11,558	6,364,887	[b]679,911	1,155,029	60
749	235	74,604	1,649	919,566	16,306	8,240,434	798,178	1,350,425	61
									62
									63
1				11,930		95,000		18,987	64
31	41	1,856	16	177,525		857,000		279,000	65
89	82	4,860	24	142,183	2,261	1,099,130	110,969	219,861	66
281	38	21,800	465	337,773	6,405	3,267,188	312,621	563,988	67

[b] Owing to error in the published statistics for 1880 the cost of cotton in Indiana is shown to be in excess of the total cost of all materials used.

TABLE 1.—COMPARATIVE STATEMENT FOR THE UNITED STATES, BY

	STATES AND TERRITORIES.	Number of establishments.	Capital.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.		
				Aggregates.		Males above 16 years.
				Average number.	Total wages.	
	Missouri:					
1	1840					
2	1850	2	$102,000	155		75
3	1860	2	169,000	170	$30,600	85
4	1870	3	489,200	361	120,300	107
5	1880	3	890,000	515	97,680	127
6	1890 (a)					
	Wisconsin:					
7	1840					
8	1850					
9	1860					
10	1870					
11	1880	1	200,000	271	67,209	66
12	1890	4	892,509	501	142,470	209
	Minnesota:					
13	1840					
14	1850					
15	1860					
16	1870					
17	1880	1	5,000	22	6,400	4
18	1890					
	Iowa:					
19	1840					
20	1850					
21	1860					
22	1870	1	1,500	6	275	3
23	1880					
24	1890 (a)					
	Utah:					
25	1840					
26	1850					
27	1860	1	6,000	7	3,420	4
28	1870	3	42,000	16	6,300	10
29	1880	1	20,000	29	2,100	16
30	1890					
	All other western states:					
31	1890 (a)	4	747,191	491	180,450	134

a Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: California, 1; Iowa, 2; Missouri, 1.

GEOGRAPHICAL DIVISIONS AND STATES AND TERRITORIES: 1840–1890—Continued.

AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES—continued.		MACHINERY.		MATERIALS USED.				Value of products.	
Females above 15 years.	Children.	Spindles.	Looms.	Total cost.	Cotton consumed.				
					Bales.	Pounds.	Cost.		
									1
80				$86,446	2,160			$142,900	2
85		5,000	80	110,000		990,000		230,000	3
154	100	16,715	415	481,745		2,196,600		798,050	4
207	181	19,312	431	376,081	6,399	3,082,132	$336,984	522,980	5
									6
									7
									8
									9
									10
149	56	10,000	400	194,556	3,173	1,541,797	180,072	328,389	11
239	53	32,592	870	382,833	6,924	3,470,388	359,117	620,196	12
									13
									14
									15
									16
12	6	1,708	24	30,000	400	200,000	22,000	40,000	17
									18
									19
									20
									21
3				4,950		20,000		7,000	22
									23
									24
									25
									26
3		70		6,000		12,000		10,000	27
2	4	1,020	11	7,051		23,500		16,803	28
8	5	432	14	3,472	54	25,788	3,223	7,937	29
									30
259	98	18,670	386	459,767	6,974	3,414,040	374,450	688,271	31

TABLE 2.—COTTON MANUFACTURE FOR THE UNITED STATES,

	STATES.	Number of establishments.	CAPITAL.							
			Value of hired property.	Direct investment.						
				Aggregate.	Value of plant.				Live assets.	
					Total.	Land.	Buildings.	Machinery, tools, and implements.	Total.	Raw materials.
1	The United States	965	$8,301,464	$354,026,843	$236,993,567	$23,225,027	$69,742,664	$138,625,806	$123,027,276	$37,796,009
2	New England states	402	3,597,474	243,153,249	156,612,532	17,674,774	47,871,383	91,666,375	86,540,717	26,167,666
3	Maine	23	262,633	26,856,754	13,335,358	1,087,916	3,774,687	8,473,355	7,515,396	2,567,137
4	New Hampshire	27	204,616	26,861,933	16,369,652	1,995,618	4,227,222	10,147,412	10,432,281	3,381,604
5	Vermont	6	.....	1,431,986	1,026,206	125,621	332,870	567,709	405,786	122,289
6	Massachusetts	187	1,325,046	128,838,837	80,892,202	9,021,576	24,636,506	47,246,120	47,946,635	15,217,473
7	Rhode Island	94	1,465,116	38,798,161	27,778,643	3,458,746	7,686,756	16,633,141	11,619,518	2,619,568
8	Connecticut	65	406,069	26,431,578	17,210,477	1,385,897	7,219,942	8,604,638	9,221,101	2,259,595
9	Middle states	239	3,957,161	51,676,249	33,611,849	2,586,935	10,124,364	20,306,550	18,664,460	4,166,971
10	New York	42	1,763,700	13,296,745	10,236,876	401,221	3,678,369	6,157,286	3,653,869	1,380,799
11	New Jersey	17	113,166	13,519,972	7,152,467	506,556	2,233,909	4,412,608	6,367,505	896,419
12	Pennsylvania	158	1,973,424	15,884,936	9,248,088	1,657,364	2,526,486	5,064,238	6,636,848	1,409,592
13	Delaware	7	56,877	1,683,803	1,132,118	149,506	221,000	761,618	551,685	66,984
14	Maryland	15	50,000	7,296,793	5,242,300	466,300	1,464,600	3,311,400	2,054,493	347,177
15	Southern states	239	346,769	53,827,363	37,919,840	3,248,968	10,596,952	24,679,920	15,967,463	6,846,162
16	Virginia	9	132,900	2,966,889	2,253,693	194,000	393,953	1,665,740	713,196	164,265
17	North Carolina	91	21,650	10,775,134	8,102,104	696,316	2,636,674	5,375,714	2,673,030	1,683,319
18	South Carolina	34	166,739	11,141,833	7,388,706	298,372	2,129,319	4,961,000	3,753,133	2,462,663
19	Georgia	53	.....	17,664,675	12,063,806	1,455,297	3,724,049	6,824,460	5,660,869	2,041,557
20	Alabama	13	.....	2,853,015	1,852,950	166,456	636,206	1,662,306	1,000,065	464,898
21	Mississippi	9	.....	2,653,743	1,313,020	77,199	342,895	892,926	746,723	186,892
22	Kentucky	5	.....	1,376,132	930,708	71,782	242,707	616,219	445,424	221,552
23	Tennessee	20	17,500	2,928,657	2,221,763	163,197	655,966	1,402,540	706,954	175,907
24	All other southern states (*b*)	5	8,000	2,067,225	1,853,156	132,355	441,789	1,279,012	214,669	45,049
25	Western states	25	400,660	5,364,042	3,449,346	326,420	1,155,965	1,972,961	1,914,696	681,276
26	Ohio	7	382,066	1,213,217	530,394	76,420	283,244	176,730	682,823	218,193
27	Indiana	6	.....	1,744,726	1,158,447	39,500	413,677	705,270	586,273	178,085
28	Illinois	4	.....	766,405	613,483	76,500	225,486	311,497	152,922	47,909
29	Wisconsin	4	.....	892,569	667,022	104,000	103,558	459,464	225,487	134,683
30	All other western states (*b*)	4	18,000	747,191	480,000	30,000	130,000	320,000	267,191	103,000

a Includes officers, firm members, and clerks. For detailed information see Table 3.

BY GEOGRAPHICAL DIVISIONS AND STATES: 1890.

CAPITAL—continued.		MISCELLANEOUS EXPENSES.							AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES. (a)		
Direct investment—Continued.											
Live assets—Continued.											
Stock in process and finished products on hand.	Cash, bills and accounts receivable, and sundries not elsewhere reported.	Total.	Rent paid for tenancy.	Taxes.	Insurance.	Repairs, ordinary, of buildings and machinery.	Interest paid on cash used in the business.	Sundries not elsewhere reported.	Employés.	Wages.	
$41,388,289	$43,842,987	$16,716,524	$488,735	$2,689,632	$1,213,322	$3,987,748	$4,098,435	$4,238,652	221,585	$69,489,272	1
29,364,303	31,008,748	12,086,430	201,201	2,086,103	701,888	3,173,346	2,730,042	3,193,850	148,718	49,908,591	2
2,187,964	2,761,195	1,185,336	11,920	224,689	74,224	258,108	285,864	330,531	13,992	4,372,473	3
2,710,389	4,340,297	1,340,222	12,277	257,889	85,623	490,999	262,646	230,794	19,533	6,429,084	4
67,017	216,480	59,893	.....	5,795	4,573	5,500	19,480	24,545	737	220,742	5
15,197,131	17,532,031	6,675,285	79,897	1,266,153	355,976	1,864,684	1,552,627	1,555,948	76,213	26,230,667	6
4,985,488	3,414,462	1,871,057	73,990	202,550	102,997	293,473	326,525	872,422	24,832	8,131,142	7
4,217,223	2,744,283	954,637	24,017	129,027	78,495	260,582	282,906	179,610	13,411	4,524,483	8
6,795,321	7,768,198	2,088,631	244,783	262,637	172,456	353,646	544,043	511,066	32,344	10,763,873	9
990,481	682,589	724,405	82,714	126,203	32,074	95,175	138,702	249,537	8,401	2,563,730	10
2,168,512	3,302,574	194,474	6,640	54,282	31,120	45,506	43,734	13,192	5,683	2,054,282	11
2,655,342	2,571,914	730,125	148,012	48,485	75,828	104,154	180,683	172,963	12,960	4,687,088	12
280,583	204,118	85,149	3,417	2,690	6,621	2,799	38,155	31,467	987	324,328	13
700,403	1,006,913	354,478	4,000	30,977	26,813	106,012	142,769	43,907	4,313	1,134,445	14
4,763,444	4,297,917	2,257,609	18,876	315,838	309,329	395,429	752,377	465,811	37,168	7,817,069	15
332,873	216,058	102,565	5,600	11,798	22,670	18,627	40,015	3,855	2,019	406,824	16
736,590	853,121	423,324	1,256	46,567	63,056	93,050	121,997	98,298	8,742	1,646,196	17
766,676	523,794	528,208	10,370	46,049	59,927	59,009	220,076	132,777	8,192	1,646,574	18
1,843,839	1,775,473	724,822	.....	158,296	89,511	119,459	239,508	118,048	10,530	2,366,085	19
238,082	297,085	154,893	.....	14,889	17,215	43,388	27,422	51,979	2,137	447,173	20
286,979	266,861	57,622	.....	6,790	8,693	10,282	19,402	12,455	1,184	290,981	21
117,217	106,655	60,200	.....	4,479	10,784	14,580	11,552	18,805	834	189,039	22
304,921	226,126	173,853	1,050	24,045	21,246	33,702	79,551	23,259	2,174	495,438	23
136,276	32,744	32,173	600	2,925	16,227	3,332	2,754	6,335	1,356	328,759	24
465,212	768,214	283,803	23,875	25,054	29,649	65,327	71,973	67,925	3,355	999,739	25
198,012	266,618	106,309	22,375	6,382	6,548	32,382	19,328	19,384	584	193,757	26
98,796	309,392	73,941	.....	9,500	10,636	9,494	29,164	15,147	1,325	332,676	27
35,288	69,725	18,986	.....	3,306	2,810	6,665	2,280	3,925	454	150,386	28
49,816	41,588	52,477	.....	3,466	4,855	7,986	15,201	20,969	501	142,470	29
83,300	80,891	32,000	1,500	2,400	4,800	8,800	6,000	8,500	491	180,450	30

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Southern states—Arkansas, 2; Louisiana, 2; Texas, 1. Western states—California, 1; Iowa, 2; Missouri, 1.

TABLE 2.—COTTON MANUFACTURE FOR THE UNITED STATES,

	STATES.	MACHINERY.								
		Spindles.			Average number of yarn.			Looms.		
		Total.	Mule.	Frame.	Process based upon number of spindles, 1880.	Ascertained by process based upon number of spindles, 1890.	Ascertained by process based upon pounds of spun product, 1890.	Total.	On plain cloths less than 28 inches wide.	On plain cloths 28 to 32 inches wide.
1	The United States.	14,188,103	5,363,486	8,824,617	28.56	29.36	22.93	324,866	23,648	91,862
2	New England states.	10,836,155	4,391,895	6,444,260	30.00	31.31	26.20	250,116	12,609	72,928
3	Maine	885,762	344,697	541,065	24.00	24.77	22.66	21,825	1,219	2,860
4	New Hampshire	1,195,643	364,234	831,409	26.00	24.43	21.14	31,850	243	10,725
5	Vermont	71,591	42,735	28,856	28.00	27.78	25.95	1,175	62	1,113
6	Massachusetts	5,824,518	2,430,719	3,393,799	28.00	30.70	26.75	133,227	6,907	48,717
7	Rhode Island	1,924,486	811,869	1,112,617	36.00	37.96	34.73	43,106	3,690	5,975
8	Connecticut	934,155	397,641	536,514	37.00	36.60	29.91	18,933	488	3,538
9	Middle states	1,633,722	822,613	811,109	25.40	31.51	20.45	35,074	5,196	10,601
10	New York	606,796	334,210	272,586	33.00	31.04	27.60	13,466	404	6,658
11	New Jersey	374,442	304,480	69,962	32.00	54.92	37.14	3,673	502	307
12	Pennsylvania	439,638	175,687	263,951	17.00	19.39	16.65	13,974	3,458	2,648
13	Delaware	53,916	2,880	51,036	20.00	22.22	22.33	996	486	304
14	Maryland	158,930	5,356	153,574	10.00	10.37	9.35	2,965	346	684
15	Southern states	1,554,000	108,474	1,445,526	13.00	15.35	14.76	36,266	5,803	8,309
16	Virginia	94,294	13,198	81,096	16.00	17.42	17.04	2,517	39	160
17	North Carolina	337,786	30,920	306,866	14.00	15.67	15.30	7,254	2,751	3,174
18	South Carolina	332,784	4,000	328,784	11.00	15.50	15.13	8,546	1,215	1,606
19	Georgia	445,452	20,524	424,928	14.00	15.03	14.35	10,459	1,434	1,513
20	Alabama	79,234	9,460	69,774	11.00	13.69	12.67	1,692	252	584
21	Mississippi	57,004	.....	57,004	12.00	14.72	14.58	1,352	.....	432
22	Kentucky	42,942	8,784	34,158	9.00	17.00	15.75	677	.....	160
23	Tennessee	97,524	21,588	75,936	13.00	12.88	12.22	2,043	.....	128
24	All other southern states	66,980	.....	66,980	.....	.....	.....	1,726	112	552
25	Western states	164,226	40,504	123,722	13.60	15.82	15.32	3,410	40	24
26	Ohio	16,560	8,152	8,408	8.00	7.88	7.73	40	40	.....
27	Indiana	74,604	16,320	58,284	15.00	15.46	14.66	1,649	.....	24
28	Illinois	21,800	8,000	13,800	8.00	19.25	17.20	465	.....	.....
29	Wisconsin	32,592	5,632	26,960	19.00	20.11	20.37	870	.....	.....
30	All other western states.	18,670	2,400	16,270	.....	.....	.....	386	.....	.....

BY GEOGRAPHICAL DIVISIONS AND STATES: 1890—Continued.

MACHINERY—continued.					MATERIALS USED.						
Looms—Continued.						Cotton.					
On plain cloths 32 to 36 inches wide.	On plain cloths more than 36 inches wide.	On twills, including sateens.	On fancy weaves.	On bags and other special fabrics.	Total cost.	Egyptian, other foreign, and sea island.			Other domestic.		
						Bales.	Pounds.	Cost.	Bales.	Pounds.	Cost.
55,356	71,591	53,726	23,233	5,450	$154,912,979	30,215	14,452,866	$3,054,774	2,231,385	1,103,492,910	$114,337,802	1
35,063	62,508	46,346	18,900	1,762	101,101,446	20,321	9,899,494	2,065,270	1,405,637	704,792,220	74,683,860	2
2,969	6,861	4,961	2,469	486	8,446,736	.....	.....	.....	132,504	65,717,252	7,053,168	3
6,232	3,840	9,770	690	350	12,962,939	.....	.....	.....	214,034	107,319,124	11,203,742	4
.....	.....	.....	.....	.....	542,065	.....	.....	.....	8,954	4,647,889	498,348	5
21,680	26,024	18,895	10,659	345	56,586,283	6,747	3,228,105	663,420	765,773	383,539,221	40,206,887	6
3,129	18,700	9,481	1,828	303	14,347,672	6,733	3,426,367	700,925	186,558	94,555,788	10,446,155	7
1,053	7,083	3,239	3,254	278	8,215,751	6,841	3,245,022	700,925	97,814	49,012,946	5,275,560	8
3,628	5,708	4,930	2,358	2,653	23,044,093	9,894	4,553,372	989,504	251,260	123,630,916	12,917,244	9
1,396	3,395	1,112	175	326	5,564,251	653	483,368	78,560	78,171	39,038,689	4,192,105	10
193	393	959	861	458	3,028,933	9,241	4,070,004	910,944	16,482	8,231,147	905,524	11
1,546	1,350	2,027	1,130	1,815	19,485,247	.....	.....	.....	92,705	44,629,588	4,371,693	12
.....	200	.....	.....	.....	587,646	.....	.....	.....	8,876	4,465,825	475,490	13
493	364	832	192	54	3,378,016	.....	.....	.....	55,926	27,265,667	2,972,432	14
13,956	2,875	2,442	1,975	906	27,764,055	.....	.....	.....	526,856	250,837,646	24,508,776	15
1,380	126	236	576	.....	1,199,578	.....	.....	.....	22,731	10,616,206	1,080,773	16
806	339	73	4	107	6,239,902	.....	.....	.....	114,371	53,546,289	5,396,974	17
3,826	1,001	898	.....	.....	6,819,320	.....	.....	.....	133,342	64,000,600	6,242,598	18
3,915	905	717	1,325	650	7,832,230	.....	.....	.....	145,859	69,139,410	6,663,560	19
684	164	.....	.....	8	1,459,048	.....	.....	.....	29,962	14,726,454	1,372,058	20
700	40	180	.....	.....	871,970	.....	.....	.....	17,366	8,449,834	793,600	21
448	.....	.....	.....	69	643,949	.....	.....	.....	11,980	5,751,305	554,206	22
1,525	.....	258	70	62	1,765,162	.....	.....	.....	33,114	15,779,360	1,554,851	23
672	300	80	.....	10	932,896	.....	.....	.....	18,131	8,828,188	850,156	24
2,709	500	8	.....	129	3,003,385	.....	.....	.....	47,632	24,232,128	2,227,922	25
.....	.....	.....	.....	.....	903,446	.....	.....	.....	11,023	5,840,078	383,556	26
1,273	352	.....	.....	.....	919,566	.....	.....	.....	16,306	8,240,434	798,178	27
440	.....	.....	.....	25	337,773	.....	.....	.....	6,405	3,267,188	312,621	28
866	.....	.....	.....	4	382,833	.....	.....	.....	6,924	3,470,388	359,117	29
130	148	8	.....	100	459,767	.....	.....	.....	6,974	3,414,040	374,450	30

TABLE 2.—COTTON MANUFACTURE FOR THE UNITED STATES

	STATES.	MATERIALS USED—continued.							
		Flax.		Hemp.		Jute.		Yarns not made in mill.	
								Cotton.	
		Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.
1	The United States	120,540	$14,600	766,931	$41,600	1,443,853	$58,310	48,779,715	$10,853,536
2	New England states					12,000	960	17,928,077	4,562,936
3	Maine							864,321	159,150
4	New Hampshire							193,255	40,560
5	Vermont								
6	Massachusetts							11,247,478	2,785,544
7	Rhode Island					12,000	960	3,333,127	852,122
8	Connecticut							2,289,896	725,560
9	Middle states	120,540	14,600	766,931	41,600	31,853	1,350	26,248,657	5,505,267
10	New York	120,540	14,600	766,931	41,600	31,853	1,350	2,551,113	440,934
11	New Jersey							1,169,600	353,204
12	Pennsylvania							21,822,153	4,651,840
13	Delaware							4,730	868
14	Maryland							701,061	58,421
15	Southern states							3,855,882	635,808
16	Virginia							5,293	821
17	North Carolina							1,938,261	327,102
18	South Carolina							945,482	171,203
19	Georgia							865,000	117,677
20	Alabama							3,000	315
21	Mississippi								
22	Kentucky							69,793	13,261
23	Tennessee							26,053	4,779
24	All other southern states							3,000	650
25	Western states					1,400,000	56,000	747,099	149,525
26	Ohio					200,000	5,000	731,499	146,300
27	Indiana								
28	Illinois								
29	Wisconsin							15,600	3,225
30	All other western states					1,200,000	51,000		

BY GEOGRAPHICAL DIVISIONS AND STATES: 1890—Continued.

MATERIALS USED—continued.

Yarns not made in mill—Continued.

Woolen.		Worsted.		Silk.		Spun silk.		Linen.		
Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	
196,874	$131,657	87,257	$62,514	32,851	$154,336	18,583	$83,064	17,722	$9,823	1
14,837	10,313	15,763	7,725	17,337	81,109	1,522	6,346	9,500	5,140	2
										3
										4
										5
7,837	4,563	14,981	6,962	10,302	39,183	892	4,270	4,500	2,140	6
2,000	2,000	782	763	235	1,826	130	576	5,000	3,000	7
5,000	3,750			6,800	40,100	500	1,500			8
179,037	120,544	71,494	54,789	15,514	73,227	17,026	76,618	8,222	4,683	9
96	38	14,494	10,918	1,583	7,237	2,510	8,550	69	27	10
										11
178,941	120,506	57,000	43,871	13,931	65,990	14,516	68,068	8,153	4,656	12
										13
										14
3,000	800					35	100			15
										16
3,000	800									17
										18
										19
						35	100			20
										21
										22
										23
										24
										25
										26
										27
										28
										29
										30

TABLE 2.—COTTON MANUFACTURE FOR THE UNITED STATES,

	STATES.	MATERIALS USED—continued.							
		Yarns not made in mill—Continued.				Waste.		Oil.	
		Jute.		Other yarn.					
		Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Gallons.	Cost.
1	The United States.	99,938	$8,976	224,729	$59,312	102,567,306	$4,749,867	1,972,491	$430,393
2	New England states.	33,363	2,383	.....	.....	71,855,604	3,359,429	1,417,740	301,432
3	Maine	.....	.....	.....	.....	4,459,851	309,655	110,024	26,718
4	New Hampshire	.....	.....	.....	.....	64,460	3,550	169,061	28,651
5	Vermont	.....	.....	.....	.....	.....	.....	12,480	1,740
6	Massachusetts	2,800	235	.....	.....	61,488,846	2,732,648	829,712	162,371
7	Rhode Island	563	48	.....	.....	4,804,447	240,390	191,665	57,030
8	Connecticut	30,000	2,100	.....	.....	1,038,000	73,186	104,798	24,922
9	Middle states	66,575	6,593	224,729	59,312	10,049,850	618,415	239,037	59,091
10	New York	5,000	400	3,000	1,350	7,160,374	444,556	53,142	13,780
11	New Jersey	.....	.....	.....	.....	200,476	10,549	62,237	15,392
12	Pennsylvania	61,575	6,193	221,729	57,962	2,689,000	163,310	88,453	21,784
13	Delaware	.....	.....	.....	.....	.....	.....	9,669	2,559
14	Maryland	.....	.....	.....	.....	.....	.....	25,536	5,576
15	Southern states	.....	.....	.....	.....	13,983,544	436,861	292,683	61,794
16	Virginia	.....	.....	.....	.....	.....	.....	12,068	1,757
17	North Carolina	.....	.....	.....	.....	415,604	26,057	84,898	20,050
18	South Carolina	.....	.....	.....	.....	7,200	360	56,038	13,158
19	Georgia	.....	.....	.....	.....	12,255,740	326,644	84,429	15,165
20	Alabama	.....	.....	.....	.....	.....	.....	7,884	1,500
21	Mississippi	.....	.....	.....	.....	.....	.....	9,636	2,065
22	Kentucky	.....	.....	.....	.....	225,000	16,300	10,775	2,428
23	Tennessee	.....	.....	.....	.....	1,080,000	67,500	8,405	1,821
24	All other southern states	.....	.....	.....	.....	.....	.....	18,550	3,250
25	Western states	.....	.....	.....	.....	6,678,308	335,162	23,031	8,076
26	Ohio	.....	.....	.....	.....	5,878,308	285,162	1,149	313
27	Indiana	.....	.....	.....	.....	800,000	50,000	9,578	3,320
28	Illinois	.....	.....	.....	.....	.....	.....	1,744	531
29	Wisconsin	.....	.....	.....	.....	.....	.....	740	187
30	All other western states	.....	.....	.....	.....	.....	.....	9,820	3,725

BY GEOGRAPHICAL DIVISIONS AND STATES: 1890—Continued.

MATERIALS USED—continued.										
Starch.		Chemicals and dyestuffs.	Fuel.				Rent of power and heat.	Mill supplies.	All other materials.	
			Total cost.	Coal.	Wood.	Other fuel.				
Pounds.	Cost.	Cost.		Cost.	Cost.	Cost.	Cost.	Cost.	Cost.	
27,448,792	$915,644	$4,266,773	$4,252,088	$4,062,958	$137,721	$51,409	$319,611	$4,871,990	$6,236,309	1
20,392,893	708,490	3,278,740	3,113,008	3,054,661	31,658	26,689	182,565	3,475,182	5,256,558	2
2,215,178	81,034	201,962	161,654	160,983	671	.....	39,374	364,048	49,973	3
3,398,612	123,302	711,540	305,150	298,764	6,086	300	24,865	285,011	236,568	4
54,560	1,453	.....	10,394	9,456	938	.....	3,140	25,900	1,090	5
10,963,003	361,419	1,939,579	1,876,222	1,871,088	5,134	.....	93,908	1,735,245	3,971,687	6
2,318,964	84,070	227,336	557,946	548,865	8,681	400	13,638	585,740	573,147	7
1,442,576	57,212	198,323	201,642	165,505	10,148	25,989	7,640	479,232	424,093	8
2,413,935	84,342	427,837	559,256	547,742	.....	11,514	75,198	640,220	704,403	9
687,712	22,522	11,388	117,026	108,928	.....	8,098	9,258	97,486	50,566	10
565,723	22,255	114,665	149,551	149,551	.....	.....	7,175	234,025	305,649	11
777,360	28,778	256,944	203,390	199,974	.....	3,416	35,195	191,987	193,080	12
177,272	4,493	39,397	20,104	20,104	.....	.....	18,670	24,030	2,035	13
205,868	6,294	15,443	69,185	69,185	.....	.....	4,900	92,692	153,073	14
4,122,517	109,510	507,585	515,599	401,280	106,063	8,256	60,698	710,162	216,362	15
265,720	8,342	35,879	17,161	16,761	400	.....	2,344	48,623	3,878	16
545,643	17,851	198,585	100,565	44,821	51,669	4,075	1,550	121,031	29,337	17
807,061	28,654	42,966	111,078	92,695	15,102	3,281	2,500	180,855	25,948	18
1,643,117	30,216	182,406	140,664	125,431	14,333	900	54,204	189,357	112,337	19
108,467	3,048	6,948	23,872	19,740	4,132	.....	.....	51,157	50	20
91,281	2,724	18,000	28,184	16,360	11,824	.....	.....	15,835	10,962	21
174,940	7,129	15,048	8,704	7,504	1,200	.....	.....	18,690	8,183	22
92,688	3,306	7,053	47,525	42,221	5,304	.....	100	53,060	25,167	23
393,591	8,240	700	37,846	35,747	2,099	.....	.....	31,554	500	24
519,447	13,302	42,611	64,225	59,275	.....	4,950	1,150	46,426	58,986	25
114,992	2,643	13,993	9,784	8,234	.....	1,550	500	6,420	49,775	26
265,905	6,678	17,218	22,176	18,776	.....	3,400	.....	16,996	5,000	27
40,950	921	7,500	7,877	7,877	.....	.....	.....	8,323	.....	28
27,600	960	.....	9,496	9,496	.....	.....	650	8,187	1,011	29
70,000	2,100	3,900	14,892	14,892	.....	.....	.....	6,500	3,200	30

TABLE 2.—COTTON MANUFACTURE FOR THE UNITED STATES,

	STATES.	PRODUCTS.							
		Total value.	Plain clothe for printing and converting.		Brown or bleached sheetings or shirtings.		Drills, twills, and esteens.		Ginghams.	
			Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value
1	The United States	$267,981,724	955,294,320	$43,550,174	962,238,062	$55,193,439	334,020,091	$23,601,239	268,996,715	$20,686,390
2	New England states	181,112,453	811.945,763	36,811,201	634,487,634	37,784,925	258.208,626	18,475,344	114,092,225	9.975,197
3	Maine	15,316,909	16,810,752	735,065	90,310,254	5,762,028	32,673,054	2,885,938	15,991,962	1,504,041
4	New Hampshire	21,958,002	57,581,153	2,666,926	79,461,338	4,553,793	50,756,073	3,130,379	27,000,000	1,700,000
5	Vermont	914,685	13,852,465	531,613						
6	Massachusetts	100,202,882	610,200,536	27,370,866	279,878,312	16,464,019	104,490,714	7,810,865	63,926,394	6,141,718
7	Rhode Island	27,310,499	76,634,732	3,588,671	141,167,278	8,482,198	46,882,914	3,229,795	4,666,144	418,789
8	Connecticut	15,409,476	36,866,125	1,918,060	43,670,452	2,522,887	23,405 871	1,418,367	2,507,725	210,649
9	Middle states	40,664,476	119,983,537	5,621,564	36,012,784	2,672,270	18,206,659	1,443,168	56,200,311	5,126,992
10	New York	9,777,295	89,881,716	4,369,731	25,906,655	1,976,092	2,195,021	219,502		
11	New Jersey	5,902,615	19 262,856	582,671	57,642	4,035	4,578,842	310,898	5.478,627	444,263
12	Pennsylvania	18,431,773	6,254,018	424,969	6,162,427	538,587	8,419,181	733,063	45.685,919	4,228,069
13	Delaware	1,095,001	2,784,947	118,193					3,489,256	328,926
14	Maryland	5,457,792	1,800,000	126,000	3,886,060	153,556	3,013,615	179,705	1,546,509	105,734
15	Southern states	41,513,711	23,365,020	1,117,409	250,526,060	12,729,063	57.153,833	3,651,150	98.481,246	5,570,157
16	Virginia	1,732,648	512,220	21,558	14.265,103	831,531	5,579,736	302,330		
17	North Carolina	9,563,443	600,000	25,000	16,810,948	894,339	651,849	62,263	56,634,853	3,028,769
18	South Carolina	9,800,798	1,350,000	54,000	89,909,344	4.426,722	32,432,976	2,052,001	8,749,312	546,849
19	Georgia	12,035,629	20,152,800	979,351	54,918,249	2,908,123	11.608,701	785,336	24.386,396	1,312,413
20	Alabama	2,190,771			17,644,120	944,135	1,128.513	66,851	1,000,000	70,000
21	Mississippi	1,333,398			11,162,809	610,269	2,072,519	143,424	2,329,403	291,349
22	Kentucky	1,000,668			9,070,300	392,995				
23	Tennessee	2,507,719	750,000	37,500	14,581,771	719,045	1,992,534	137,734	5,221,282	308,777
24	All other southern states	1,348,637			22,163,416	1,001,904	1,687,005	101,220	160,000	12,000
25	Western states	4,691,084			41,211,584	2,007,181	450,973	31,568	222,933	14,044
26	Ohio	1,468.204								
27	Indiana	1,350,425			18,494,154	854.063	450,973	31,568		
28	Illinois	563,988			6,454,752	315.178				
29	Wisconsin	620.196			10,730,618	570,071				
30	All other western states	688.271			5,532,060	267.269			222,933	14,044

BY GEOGRAPHICAL DIVISIONS AND STATES: 1890—Continued.

PRODUCTS—continued.													
Cotton flannels.		Upholstery goods.								Fine or fancy woven fabrics.		Duck.		
		Tapestries.		Curtains.		Chenille.		Other upholstery goods.						
Square yards.	Value.	Square yards.	Value.	Pairs.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	
132, 524, 706	$10, 574, 924	642, 061	$354, 987	676, 032	$1,225,364	666, 405	$360, 706	250, 970	$129, 182	127, 373, 179	$12, 545, 929	55, 192, 538	$8, 604, 395	1
110, 106, 513	8, 887, 362	.....	.....	.....	.....	.....	.....	35, 000	45, 000	117, 000, 295	11, 102, 236	16, 979, 346	2, 836, 615	2
6, 145, 611	537, 434	.....	.....	.....	.....	.....	.....	.....	.....	16, 025, 222	1, 256, 471	612, 461	140, 731	3
23, 259, 138	1, 870, 246	.....	.....	.....	.....	.....	.....	.....	.....	3, 008, 380	352, 917	6, 673, 924	092, 224	4
		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5
79, 001, 764	6, 319, 622	.....	.....	.....	.....	.....	.....	35, 000	45, 000	59, 661, 558	5, 682, 217	6, 174, 332	1, 101, 367	6
1, 760, 000	160, 000	.....	.....	.....	.....	.....	.....	.....	.....	20, 363, 202	2, 004, 668	.....	.....	7
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	24, 541, 933	1, 805, 963	4, 118, 629	902, 293	8
10, 809, 242	949, 761	642, 061	354, 987	675, 932	1, 224, 964	666, 405	360, 706	215, 970	84, 182	9, 968, 640	1, 405, 897	22, 541, 200	4, 190, 527	9
.....	.....	250, 000	106, 000	3, 500	17, 500	.....	.....	.....	.....	50, 000	20, 000	150, 000	34, 500	10
1, 750, 173	155, 421	.....	.....	.....	.....	.....	.....	.....	.....	449, 358	31, 619	1, 165, 338	254, 917	11
8, 810, 063	780, 022	392, 061	254, 987	672, 432	1, 207 464	666, 405	360, 706	215, 970	84, 182	8, 917, 282	1, 243, 878	.....	.....	12
		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13
249. 006	14, 318	.....	.....	.....	.....	.....	.....	.....	.....	552, 000	110, 400	21, 225, 862	3, 901, 116	14
11, 608, 951	737, 861	.....	.....	.....	.....	.....	.....	.....	.....	404, 244	37, 796	15, 276, 658	1, 570, 917	15
1, 172, 632	87, 947	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 421, 120	122, 873	16
7, 731, 783	453, 385	.....	.....	.....	.....	.....	.....	.....	.....	164, 244	13, 796	14, 670	2, 263	17
466, 600	32, 511	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18
2, 051, 168	146, 664	.....	.....	.....	.....	.....	.....	.....	.....	240, 000	24, 000	10, 309, 019	967, 799	19
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3, 379, 297	463, 342	20
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 000	85	21
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22
192, 828	17, 354	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	145. 552	14, 555	24
.....	.....	.....	.....	100	400	.....	.....	.....	.....	.....	.....	401, 334	66, 336	25
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	27
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28
.....	.....	.....	.....	100	400	.....	.....	.....	.....	.....	.....	.....	.....	29
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	401, 334	66, 336	30

TABLE 2.—COTTON MANUFACTURE FOR THE UNITED STATES,

	STATES.	PRODUCTS—continued.									
		Ticks, denims, and stripes.		Yarns.		Twine.		Batting or wadding.		Waste.	
		Square yards.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1	The United States	167,121,426	$16,987,546	166,397,003	$33,247,596	8,533,730	$1,364,300	20,470,556	$2,094,232	141,109,597	$5,679,701
2	New England states	130,778,135	13,516,387	62,779,938	15,380,453	2,971,413	532,632	9,631,309	921,331	96,882,997	3,754,271
3	Maine	7,581,001	1,129,811	1,718,659	321,024	314,711	59,835	306,620	26,769	3,741,265	145,368
4	New Hampshire	44,251,519	4,613,278	2,347,271	453,826	.....	.....	50,000	4,000	10,927,461	397,272
5	Vermont	.....	.....	1,607,508	369,812	.....	.....	1,500	135	350,000	13,125
6	Massachusetts	61,192,423	6,118,390	39,770,635	9,858,787	1,595,812	255,091	4,849,500	408,003	68,327,318	2,713,722
7	Rhode Island	900,000	60,000	12,569,683	2,953,458	253,814	64,233	4,173,689	462,424	8,794,229	377,317
8	Connecticut	16,853,192	1,594,908	4,766,182	1,423,546	807,076	153,473	250,000	20,000	4,742,724	197,467
9	Middle states	19,468,275	2,257,953	31,532,884	5,699,441	2,778,867	385,076	1,516,694	166,985	17,345,471	939,814
10	New York	.....	.....	7,289,995	1,468,639	691,785	95,000	1,070,713	115,131	9,124,336	502,624
11	New Jersey	.....	.....	379,949	81,283	7,600	2,280	147,212	17,725	2,312,995	110,720
12	Pennsylvania	16,309,604	1,956,998	21,412,876	3,683,790	.....	.....	298,769	34,129	3,307,740	247,460
13	Delaware	2,669,600	239,997	1,917,646	378,894	.....	.....	.....	.....	100,400	4,010
14	Maryland	489,071	60,958	532,418	86,835	2,079,482	287,796	.....	.....	2,500,000	75,000
15	Southern states	16,875,016	1,213,206	67,752,241	11,311,733	1,787,250	285,649	2,383,961	202,655	20,796,367	656,142
16	Virginia	5,069,000	351,796	.....	.....	.....	.....	1,475	147	185,000	7,400
17	North Carolina	879,990	87,284	25,483,803	4,299,020	999,480	154,777	41,986	3,556	2,008,873	64,817
18	South Carolina	28,987	2,029	15,306,665	2,470,535	66,218	13,557	100	62	3,161,108	117,144
19	Georgia	7,869,707	582,608	16,842,028	2,802,766	174,613	26,352	717,250	51,106	13,291,557	390,420
20	Alabama	2,760,590	173,982	2,062,281	332,560	186,723	30,156	.....	.....	460,344	18,313
21	Mississippi	.....	.....	1,583,623	273,496	.....	.....	77,350	5,816	321,119	8,459
22	Kentucky	.....	.....	1,636,776	350,841	137,055	18,649	115,475	10,725	87,500	3,500
23	Tennessee	266,742	15,507	4,683,815	757,995	223,161	42,158	1,430,325	131,243	930,866	32,964
24	All other southern states	.....	.....	153,250	24,520	.....	.....	.....	.....	350,000	13,125
25	Western states	.....	.....	4,331,940	855,969	996,200	160,943	6,938,592	803,261	6,084,762	329,474
26	Ohio	.....	.....	1,425,000	309,250	.....	.....	4,955,000	590,000	5,330,000	307,954
27	Indiana	.....	.....	1,906,940	373,719	.....	.....	901,350	83,001	354,851	7,474
28	Illinois	.....	.....	950,000	169,000	50,000	10,000	557,242	69,810	.....	.....
29	Wisconsin	.....	.....	.....	.....	31,000	5,271	225,000	29,250	274,911	10,296
30	All other western states	.....	.....	50,000	4,000	915,200	145,672	300,000	31,200	125,000	3,750

a Includes the value of "sewing cotton". This item is not shown separately in order to avoid disclosing the operations of individual establishments. 13,868,309 pounds of sewing cotton were manufactured in the United States during the census year 1890, valued at $11,637,500. Of this amount 9,454,240 pounds, valued at $7,860,189, were manufactured in the New England states; 3,729,722 pounds, valued at $3,585,476, in the middle states; and 684,347 pounds, valued at $191.835, in the southern states.

BY GEOGRAPHICAL DIVISIONS AND STATES: 1890—Continued.

PRODUCTS—continued.							PRINTING, DYEING, AND BLEACHING CLOTH AND YARN IN COTTON MILLS.								
Rope.		All other products. (a)	Weight of piece goods produced.	Weight of yarn spun and purchased.	Weight of products other than piece goods and yarn.	Number of printing machines.	Cloth printed.	Additional gross value given by printing.	Cloth dyed.	Yarn dyed.	Additional gross value given by dyeing.	Cloth bleached.	Yarn bleached.	Additional gross value given by bleaching.	
Pounds.	Value.	Value.	Pounds.	Pounds.	Pounds.		Square yards.		Square yards.	Pounds.		Square yards.	Pounds.		
3,590,228	$479,415	$31,242,205	758,903,844	164,184,392	226,919,071	74	142,590,083	$3,217,062	40,338,722	90,792,931	$3,717,532	65,540,307	1,671,434	$531,618	1
75,000	11,250	21,078,309	519,013,355	59,227,770	146,622,828	66	142,590,083	3,217,062	8,494,683	63,193,072	2,502,999	55,207,889	602,286	423,908	2
.....	.....	812,394	53,204,318	1,758,935	8,601,052	2	1,912,009	4,877	2,900,743	8,885,429	312,450	26,340,921	.....	190,797	3
.....	.....	1,613,141	88,829,137	2,347,271	11,271,879	16	24,284,721	339,985	.....	14,908,951	747,339	5,300,900	.....	30,000	4
.....	.....	.....	2,144,883	1,607,508	351,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	5
.....	.....	9,913,215	276,447,550	35,96..705	37,797,086	44	114,319,877	2,692,950	1,304,064	29,486,218	976,832	22,966,968	.....	168,888	6
.....	.....	5,508,946	62,796,766	12,613,169	20,144,123	3	1,948,476	178,000	2,189,876	3,740,931	250,016	.....	362,286	3,623	7
75,000	11,250	3,236,613	35,599,701	4,936,182	8,457,188	1	125,000	1,250	2,100,000	6,171,543	216,362	600,000	240,000	30,690	8
120,822	17,358	7,762,831	85,279,619	32,387,884	34,717,608	5	.....	.....	30,057,104	8,365,489	605,756	.....	999,948	34,582	9
.....	.....	858,576	25,698,119	7,389,995	13,376,202	5	.....	.....	6,255,000	379,473	13,680	.....	.....	.....	10
.....	.....	3,906,783	6,308,690	379,949	6,086,081	.....	.....	.....	19,762,848	1,778,371	276,419	.....	479,948	21,582	11
.....	.....	2,653,469	31,142,757	22,167,876	10,439,621	.....	.....	.....	.....	5,238,410	262,944	.....	520,000	13,000	12
.....	.....	4,981	1,910,592	1,917,646	160,400	.....	.....	.....	3,489,256	738,004	33,552	.....	.....	.....	13
120,822	17,358	339,022	20,219,461	532,418	4,715,304	.....	.....	.....	550,000	231,222	19,161	.....	.....	.....	14
2,894,406	375,807	2,054,157	144,177,852	68,266,708	29,192,081	3	.....	.....	1,786,935	17,992,439	574,479	10,032,418	69,200	70,128	15
.....	.....	7,066	7,719,379	.....	225,732	.....	.....	.....	.....	1,397,350	32,684	.....	.....	.....	16
279,746	37,218	436,956	20,670,453	25,483,797	4,363,605	.....	.....	.....	1,786,935	5,951,739	208,198	.....	.....	.....	17
.....	.....	85,388	39,883,826	15,396,137	2,481,426	.....	.....	.....	.....	1,487,150	57,759	2,438,468	.....	18,288	18
598,353	84,875	973,816	42,157,349	17,357,029	15,465,209	3	.....	.....	.....	6,970,922	220,482	7,593,950	69,200	51,849	19
505,314	55,235	36,197	9,636,974	2,062,281	1,165,416	.....	.....	.....	.....	450,900	18,000	.....	.....	.....	20
.....	.....	500	5,383,336	1,583,623	398,469	.....	.....	.....	.....	.....	.....	.....	.....	.....	21
650,104	87,764	136,194	2,611,339	1,636,776	1,225,629	.....	.....	.....	.....	1,436,829	17,692	.....	.....	.....	22
838,802	107,844	199,598	7,626,528	4,683,815	3,480,863	.....	.....	.....	.....	363,467	18,173	.....	.....	.....	23
22,687	2,871	178,442	8,488,668	153,250	385,732	.....	.....	.....	.....	25,000	1,500	.....	.....	.....	24
500,000	75,000	346,998	10,433,018	4,301,940	16,386,554	.....	.....	.....	.....	1,241,940	34,298	309,000	.....	3,000	25
.....	.....	261,000	.....	1,425,000	11,235,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	26
.....	.....	.....	4,772,247	1,876,940	1,257,201	.....	.....	.....	.....	891,946	22,298	.....	.....	.....	27
.....	.....	.....	1,424,131	350,000	607,242	.....	.....	.....	.....	200,000	6,000	.....	.....	.....	28
.....	.....	4,908	2,682,696	.....	546,911	.....	.....	.....	.....	.....	.....	.....	.....	.....	29
500,000	75,000	81,000	1,554,034	50,000	2,740,200	.....	.....	.....	.....	150,000	6,000	300,000	.....	3,900	30

TABLE 3.—CLASSIFICATION OF EMPLOYÉS AND WAGES IN COTTON

	STATES.	Number of establishments.	AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS. (a)								
			Aggregates.		Officers or firm members actively engaged in the industry or in supervision.						
					Males above 16 years.				Females above 15 years.			
			Average number.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.
1	The United States	905	221,585	$69,489,272	1,351	48	$34.93	$2,286,461	3	42	$15.34	$1,950
2	Alabama	13	2,137	447,173	27	46	25.18	31,525				
3	Connecticut	65	13,411	4,524,483	98	49	36.26	173,586				
4	Delaware	7	987	324,328	8	50	25.75	10,300				
5	Georgia	53	10,530	2,366,085	96	47	27.31	122,396				
6	Illinois	4	454	150,386	10	50	24.10	12,050				
7	Indiana	6	1,325	332,676	14	49	29.38	20,324				
8	Kentucky	5	834	189,039	12	50	22.37	13,420				
9	Maine	23	13,992	4,372,473	42	49	60.29	123,586				
10	Maryland	15	4,313	1,134,445	24	46	52.85	58,800				
11	Massachusetts	187	76,213	26,230,667	284	49	52.79	736,818	1	44	17.14	750
12	Mississippi	9	1,184	290,981	16	48	24.61	19,100				
13	New Hampshire	27	19,533	6,429,084	34	50	44.93	75,824				
14	New Jersey	17	5,683	2,054,282	20	49	39.79	38,840				
15	New York	42	8,401	2,563,730	48	49	35.10	82,700				
16	North Carolina	91	8,742	1,646,196	135	48	18.59	121,730				
17	Ohio	7	584	193,757	17	49	21.97	18,400				
18	Pennsylvania	158	12,960	4,687,088	182	48	24.22	210,223				
19	Rhode Island	94	24,832	8,131,142	128	49	31.61	196,779				
20	South Carolina	34	8,192	1,646,574	64	48	34.14	105,970				
21	Tennessee	20	2,174	495,438	36	49	21.78	38,185	2	42	14.40	1,200
22	Vermont	6	737	220,742	11	50	26.55	14,604				
23	Virginia	9	2,019	406,824	21	48	26.96	27,181				
24	Wisconsin	4	501	142,470	6	50	21.33	6,400				
25	All other states (b)	9	1,847	509,209	18	46	33.43	27,720				

	STATES.	AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS—continued.									
		Operatives and skilled—Continued.				Unskilled.					
		Children.				Males above 16 years.				Females above 15 years.	
		Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.
26	The United States	22,433	49	$2.65	$2,913,283	5,105	49	$7.69	$1,934,546	88	50
27	Alabama	473	49	1.78	41,496	78	49	4.77	18,290		
28	Connecticut	1,045	49	3.29	168,520	322	50	7.92	126,756		
29	Delaware	217	50	2.65	28,703	21	50	9.28	9,748		
30	Georgia	2,287	48	1.96	213,175	200	47	6.09	57,733		
31	Illinois	38	50	2.47	4,696	6	50	9.00	2,700		
32	Indiana	235	50	2.27	26,544	9	50	7.21	3,245		
33	Kentucky	178	50	1.89	16,857	5	50	5.40	1,350		
34	Maine	705	50	2.88	101,592	303	49	7.98	118,901	15	50
35	Maryland	938	48	2.40	107,442	151	47	7.85	55,792		
36	Massachusetts	3,953	50	3.35	655,504	1,759	49	8.21	713,205	29	50
37	Mississippi	237	48	1.67	19,127	38	47	7.09	12,725		
38	New Hampshire	841	49	3.03	124,997	498	50	8.80	218,318	5	50
39	New Jersey	398	50	2.70	53,819	86	48	10.68	44,342	6	50
40	New York	1,025	50	3.08	157,466	150	50	7.21	53,968	10	50
41	North Carolina	2,038	49	1.84	184,801	219	49	4.71	50,679	2	50
42	Ohio	7	50	1.63	572	8	49	11.82	4,628		
43	Pennsylvania	1,393	48	2.80	188,933	164	49	8.01	64,739	3	50
44	Rhode Island	3,138	50	3.12	486,951	734	50	7.61	276,813		
45	South Carolina	2,103	49	1.93	199,991	214	49	5.00	52,735	1	50
46	Tennessee	319	49	2.30	35,742	71	49	6.10	21,401	17	50
47	Vermont	87	50	2.79	12,133	17	50	7.11	6,041		
48	Virginia	416	46	2.11	40,719	17	49	6.36	5,225		
49	Wisconsin	53	50	1.61	4,264	7	50	9.19	3,215		
50	All other states	309	49	2.61	39,239	28	48	8.91	11,997		

a The average weekly earnings per employé are computed from individual reports. The average number of employés reported by each establishment is multiplied by the number of weeks embraced by the term of operation; the result is the number of weeks required for one employé to perform the labor. Aggregating such results of individual reports the number of weeks required for one employé to perform the labor is obtained. This number used as a divisor for the total wages produces the true average weekly earnings.

MANUFACTURE FOR THE UNITED STATES, BY STATES: 1890.

AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS—continued.

Clerks.								Operatives and skilled.								
Males above 16 years.				Females above 15 years.				Males above 16 years.				Females above 15 years.				
Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	
1,276	49	$18.19	$1,140,901	79	50	$9.04	$35,422	80,735	49	$7.75	$30,761,249	95,733	49	$5.53	$26,019,812	1
21	50	11.85	12,340	1	50	8.00	400	630	49	5.31	164,103	793	49	4.19	162,401	2
88	50	24.79	109,010	5	50	9.36	2,341	6,063	49	7.68	2,289,872	5,223	49	5.69	1,453,728	3
8	50	14.21	5,682	.....	.....	.....	.....	239	50	10.41	124,414	484	50	5.91	143,046	4
116	48	13.36	74,189	4	48	12.72	2,464	3,345	47	5.75	907,724	3,458	47	4.55	745,088	5
13	50	21.15	13,750	1	50	12.00	600	106	50	8.14	43,137	280	50	5.25	73,453	6
2	46	21.93	2,010	.....	.....	.....	.....	316	50	7.69	120,483	616	50	4.39	135,170	7
4	50	25.23	5,046	.....	.....	.....	.....	263	50	5.89	77,516	372	50	4.02	74,850	8
38	49	19.12	35,364	.....	.....	.....	.....	4,710	48	7.52	1,714,820	6,580	48	5.68	1,808,700	9
32	47	13.06	19,749	1	50	7.20	360	1,080	48	7.46	387,820	1,968	48	5.12	483,721	10
345	50	20.90	357,097	39	50	9.04	17,637	30,413	50	8.05	12,154,162	34,379	50	5.89	10,024,634	11
14	47	11.97	7,884	.....	.....	.....	.....	368	48	7.09	126,528	265	49	4.66	60,724	12
112	50	19.52	108,998	4	50	10.29	2,058	7,379	50	7.56	2,775,744	10,079	50	5.83	2,919,999	13
24	50	23.47	28,163	7	49	7.60	2,620	1,703	48	10.44	846,715	2,948	48	6.25	892,363	14
37	50	17.96	32,999	.....	.....	.....	.....	2,973	50	7.62	1,129,685	3,646	50	5.28	960,079	15
91	49	10.90	48,234	1	50	6.00	300	2,362	49	5.25	607,637	3,272	49	3.21	513,130	16
12	49	22.37	13,144	1	46	13.09	600	227	49	9.30	103,895	312	48	3.53	52,518	17
107	48	16.87	87,106	5	49	7.09	1,742	4,560	47	9.71	2,094,216	5,521	48	6.42	1,714,418	18
126	50	18.95	118,776	2	50	8.20	820	9,431	50	7.99	3,737,253	9,335	49	5.70	2,631,457	19
52	49	11.10	28,370	5	47	7.33	1,740	2,587	49	5.17	651,706	2,986	49	3.90	567,939	20
11	48	20.83	11,000	1	50	9.60	480	534	49	6.31	165,661	754	49	3.24	118,742	21
2	50	16.00	1,600	.....	.....	.....	.....	303	50	7.53	114,030	304	50	4.50	68,384	22
8	47	15.15	5,650	.....	.....	.....	.....	516	47	6.29	153,236	908	47	3.54	150,677	23
5	50	19.60	4,900	.....	.....	.....	.....	191	50	6.54	62,460	239	50	5.12	61,231	24
8	50	24.60	9,840	2	50	12.60	1,260	436	49	9.76	208,432	1,011	50	4.05	203,360	25

AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS—continued.

Unskilled—Continued.						PIECEWORKERS—AVERAGE NUMBER EMPLOYED AND TOTAL WAGES.							
Females above 15 years—Continued.		Children.				Summary.		Males above 16 years.		Females above 15 years.		Children.	
Average weekly earninge per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Wages.	Number.	Wages.	Number.	Wages.	Number.	Wages.
$4.37	$19,167	67	50	$2.16	$7,234	14,715	$4,369,247	2,997	$1,101,722	10,786	$3,126,107	932	$141,418
.....	.....	.....	.....	.....	.....	114	16,618	27	5,806	59	9,283	28	1,529
.....	.....	.....	.....	.....	.....	567	200,670	94	34,309	473	166,361	.....	.....
.....	.....	.....	.....	.....	.....	10	2,435	6	1,377	4	1,058	.....	.....
.....	.....	.....	.....	.....	.....	1,024	243,316	304	108,204	547	116,614	173	18,498
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	133	24,900	.....	.....	133	24,900	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3.37	2,528	5	50	3.00	750	1,594	466,232	180	66,567	1,261	360,680	153	38,985
.....	.....	.....	.....	.....	.....	119	20,761	18	4,181	101	16,580	.....	.....
5.87	8,447	1	50	3.00	150	5,010	1,562,263	929	345,601	3,944	1,199,736	137	16,926
.....	.....	.....	.....	.....	.....	246	44,893	44	12,585	133	24,658	69	7,650
.....	.....	.....	.....	.....	.....	581	201,679	267	112,950	261	75,708	53	13,021
5.87	1,467	.....	.....	.....	.....	488	145,954	39	27,954	437	116,188	12	1,812
3.94	1,182	3	50	1.89	284	512	144,697	123	44,562	378	98,941	11	1,194
4.27	2,136	.....	.....	.....	.....	622	119,477	207	49,054	382	68,176	33	2,247
2.08	208	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	1,020	324,435	267	121,614	734	199,802	19	3,019
2.21	332	5	50	3.78	944	1,937	682,137	342	126,718	1,552	548,258	43	7,161
.....	.....	1	50	3.12	156	164	36,412	48	13,560	83	19,040	33	3,812
4.64	232	16	50	1.85	1,479	394	97,137	65	16,210	226	63,101	103	17,826
3.10	2,635	35	50	1.86	3,255	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	13	3,950	5	2,050	5	1,750	3	150
.....	.....	.....	.....	.....	.....	133	24,136	30	8,220	43	8,428	60	7,488
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	1	50	4.32	216	34	7,145	2	200	30	6,845	2	100

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Arkansas, 2; California, 1; Iowa, 2; Louisiana, 2; Missouri, 1; Texas, 1.

TABLE 4.—AVERAGE NUMBER OF EMPLOYÉS AT THE DIFFERENT WEEKLY RATES OF PAY IN COTTON MANUFACTURE FOR THE UNITED STATES, BY STATES: 1890.

STATES.	Number of establishments.	WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK. (a)									
		Aggregates.		Males above 16 years.							
		Average number.	Total wages.	Total number.	Under $5.	$5 and over but under $6.	$6 and over but under $7.	$7 and over but under $8.	$8 and over but under $9.	$9 and over but under $10.	$10 and over but under $12.
The United States	905	221,585	$69,489,272	88,467	15,164	9,924	15,491	10,485	9,120	8,712	8,409
Alabama	13	2,137	447,173	756	377	168	76	58	38	42	11
Connecticut	65	13,411	4,524,483	6,571	906	673	1,401	973	678	622	541
Delaware	7	987	324,328	276	14	14	23	15	15	59	40
Georgia	53	10,530	2,366,085	3,757	1,653	640	641	189	97	126	99
Illinois	4	454	150,386	135	24	7	6	4	12	18	29
Indiana	6	1,325	332,676	341	19	95	78	24	35	17	13
Kentucky	5	834	189,039	284	120	69	11	10	7	42	4
Maine	23	13,992	4,372,473	5,693	704	555	1,340	578	375	516	524
Maryland	15	4,313	1,134,445	1,287	231	225	100	141	122	129	161
Massachusetts	187	76,213	26,230,667	32,801	4,252	3,061	5,779	4,354	3,790	3,938	3,711
Mississippi	9	1,184	290,981	436	93	53	80	50	28	40	25
New Hampshire	27	19,533	6,429,084	8,023	951	1,246	1,385	1,108	750	876	876
New Jersey	17	5,683	2,054,282	1,833	163	65	289	111	354	121	185
New York	42	8,401	2,563,730	3,208	691	552	460	420	156	224	291
North Carolina	91	8,742	1,646,196	2,807	1,333	439	446	145	71	74	59
Ohio	7	584	193,757	264	27	9	17	24	41	20	60
Pennsylvania	158	12,960	4,687,088	5,613	396	331	693	528	447	598	637
Rhode Island	94	24,832	8,131,142	10,419	1,132	876	1,937	1,452	1,877	998	1,000
South Carolina	34	8,192	1,646,574	2,917	1,536	509	360	136	59	76	64
Tennessee	20	2,174	495,438	652	248	55	109	45	26	92	8
Vermont	6	737	220,742	333	52	47	70	50	25	22	26
Virginia	9	2,019	406,824	562	151	176	81	44	18	21	21
Wisconsin	4	501	142,470	209	56	53	28	6	13	11	13
All other states (b)	9	1,847	509,209	490	35	66	81	20	86	30	11

STATES.	WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK—continued.									
	Males above 16 years—Continued.				Females above 15 years.					
	$12 and over but under $15.	$15 and over but under $20.	$20 and over but under $25.	$25 and over.	Total number.	Under $5.	$5 and over but under $6.	$6 and over but under $7.	$7 and over but under $8.	$8 and over but under $9.	$9 and over but under $10.
The United States	5,427	3,027	1,291	1,417	95,903	32,090	20,823	21,731	11,324	5,633	2,810
Alabama	11	5	13	17	794	532	203	42	11	6	.....
Connecticut	369	205	84	119	5,228	1,313	1,262	1,486	750	299	103
Delaware	65	16	6	9	484	106	116	135	58	34	35
Georgia	76	102	66	68	3,462	2,059	599	434	308	48	6
Illinois	1	13	8	13	281	60	149	39	11	16	5
Indiana	26	15	8	11	616	431	126	48	8	3	.....
Kentucky	5	6	4	6	372	292	50	4	9	7	2
Maine	253	109	82	57	6,595	1,666	1,693	1,929	752	244	185
Maryland	85	57	16	20	1,969	1,006	362	376	116	103	6
Massachusetts	2,204	843	339	530	34,448	9,418	6,987	8,427	4,643	2,865	1,512
Mississippi	31	22	11	3	265	108	102	52	3	.....	.....
New Hampshire	459	171	113	88	10,088	2,197	2,979	2,468	1,134	642	368
New Jersey	214	254	42	35	2,961	578	610	718	831	181	34
New York	207	121	40	46	3,656	1,156	947	1,178	281	62	20
North Carolina	70	82	52	36	3,275	2,849	294	111	18	3	.....
Ohio	9	32	9	16	313	281	27	.....	4	.....	.....
Pennsylvania	626	489	142	126	5,529	1,348	1,103	1,153	899	401	335
Rhode Island	513	362	151	121	9,337	2,179	2,030	2,849	1,399	615	168
South Carolina	53	43	37	44	2,992	2,136	692	136	18	6	4
Tennessee	17	18	23	11	774	658	70	36	7	.....	1
Vermont	17	13	3	8	304	171	73	31	21	3	1
Virginia	13	12	15	10	908	853	40	15	.....	.....	.....
Wisconsin	14	8	7	.....	239	69	81	43	10	35	1
All other states	89	29	20	23	1,013	633	228	27	33	66	21

a In comparing the table of weekly rates and the average number of employés at each rate with the average weekly earnings presented in Table 3, it must be remembered that it is not practicable to obtain true average weekly earnings from the table of weekly rates, because the term of employment varies for employés employed at the respective rates.

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Arkansas, 2; California, 1; Iowa, 2; Louisiana, 2; Missouri, 1; Texas, 1.

TABLE 4.—AVERAGE NUMBER OF EMPLOYÉS AT THE DIFFERENT WEEKLY RATES OF PAY IN COTTON MANUFACTURE FOR THE UNITED STATES, BY STATES: 1890—Continued.

STATES.	WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK—continued.									PIECEWORKERS.	
	Females above 15 years—Continued.				Children.						
	$10 and over but under $12.	$12 and over but under $15.	$15 and over but under $20.	$20 and over but under $25.	Total number.	Under $5.	$5 and over but under $6.	$6 and over but under $7.	$7 and over but under $8.	Average number.	Total wages.
The United States	1,152	282	34	24	22,500	21,798	684	15	3	14,715	$4,369,247
Alabama					473	473				114	16,618
Connecticut	14	5	2		1,045	1,032	12		1	567	200,670
Delaware					217	216	1			10	2,435
Georgia		3	2		2,287	2,234	50	3		1,024	243,316
Illinois		1			38	38					
Indiana					235	235				133	24,900
Kentucky	4		4		178	178					
Maine	121	5			710	710				1,594	466,232
Marylaud					938	938				119	20,761
Massachusetts	528	53	11	4	3,954	3,655	293	6		5,010	1,562,263
Mississippi					237	237				246	44,893
New Hampshire	280	20			841	822	19			581	201,679
New Jersey	4	1	4		401	394	7			488	145,954
New York	9	3			1,025	876	149			512	144,697
North Carolina					2,038	2,008	25	5		622	119,477
Ohio		1			7	7					
Pennsylvania	93	167	10	20	1,398	1,324	74			1,020	324,435
Rhode Island	85	21			3,139	3,093	44	1	1	1,937	682,137
South Carolina					2,119	2,108	10		1	164	36,412
Tennessee		2			354	354				394	97,137
Vermont	4				87	87				13	3,950
Virginia					416	416				133	24,136
Wisconsin					53	53					
All other states	10		1		310	310				34	7,145

SILK MANUFACTURE.

BY BYRON ROSE.

The very full and comprehensive report prepared by the late William C. Wyckoff, special agent in charge of the inquiry into the manufacture of silk and silk goods at the Tenth Census, which report covered the entire period from the earliest introduction of silk on the American continent to the decennial period of 1880, precludes the necessity in this report for any extended reference to the rise and progress of silk manufacture in the United States beyond such as may be necessary for purposes of comparison.

PRODUCTION.

The growth of the silk industry during the past decade, both in quantity and value of production, may justly be considered as one of leading interest. The value of finished products of silk manufacture in 1890 was $69,154,599, an increase in value over that of 1880 of $34,634,876, or 100.33 per cent. Table 1 exhibits the leading general facts regarding silk manufacture for the census years 1890 and 1880, showing by each state and for the United States the number of establishments, amount of capital, statistics of machinery, miscellaneous expenses, average number of employés and their wages, cost of materials used, and value of products..

TABLE 1.—COMPARATIVE STATEMENT FOR THE UNITED STATES, BY STATES: 1890 AND 1880.

STATES.	Years.	Number of establishments.	CAPITAL.				Miscellaneous expenses. (c)	MACHINERY.				
			Total. (a)	Value of land and buildings.	Value of machinery, tools, and implements.	Live assets. (b)		Looms.				
								Hand.		Power.		
								On broad goods.	On narrow goods.	On broad goods.	On ribbons.	On other narrow goods.
The United States	1890	472	$51,007,537	$6,904,628	$14,181,680	$29,921,229	$4,259,623	413	1,334	14,866	4,389	1,567
	1880	382	19,125,300	3,836,600	5,227,500	10,061,200	.....	1,629	1,524	3,103	(d)	(d)
California	1890	9	112,283	.....	30,409	81,874	10,438	.....	35	.....	1	.....
	1880	5	164,300	16,400	62,000	85,900	.....	.....	24	.....	.....	.....
Connecticut	1890	35	9,037,042	1,295,789	1,617,538	6,123,715	270,426	6	.....	1,053	290	29
	1880	28	4,436,500	746,000	1,247,550	2,442,950	.....	2	10	448	.....	.....
Illinois	1890	10	422,096	93,000	106,200	222,896	35,761	.....	82	.....	.....	44
	1880	5	82,000	25,000	30,000	27,000	.....	.....	51	.....	.....	.....
Maryland	1890	4	50,400	7,500	12,400	30,500	3,798	.....	.....	.....	14	.....
	1880	4	20,900	3,500	10,000	7,400	.....	.....	39	.....	.....	.....
Massachusetts	1890	20	3,353,296	364,800	591,908	2,396,588	484,390	41	55	354	.....	90
	1880	22	1,306,900	194,100	303,950	808,850	.....	62	91	.....	.....	.....
New Jersey	1890	132	16,809,927	2,170,079	5,039,564	9,600,284	1,356,137	218	19	9,146	2,112	229
	1880	106	6,952,525	984,100	2,290,000	3,678,225	.....	1,444	153	2,017	.....	.....
New York	1890	185	11,165,918	1,376,242	3,612,758	6,176,918	1,123,671	80	972	1,838	1,478	572
	1880	151	4,696,775	1,433,000	966,000	2,297,775	.....	85	906	543	.....	.....
Ohio	1890	3	37,830	15,000	1,750	21,080	2,662	8	8	.....	.....	.....
	1880	6	24,700	4,000	12,000	8,700	.....	.....	22	.....	.....	.....
Pennsylvania	1890	66	9,362,063	1,462,502	2,941,679	4,957,882	939,051	60	103	2,306	451	603
	1880	49	1,379,900	422,000	287,000	670,900	.....	36	226	95	.....	.....
Rhode Island	1890	3	122,256	.....	70,364	51,892	17,427	.....	.....	.....	43	.....
	(e) 1880	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states	(f) 1890	5	534,426	119,716	157,110	257,600	15,862	.....	.....	169	.....	.....
	(g) 1880	6	61,600	8,500	19,000	33,500	.....	.....	2	.....	.....	.....

a Value of hired property is not included in the capital reported in 1889, because it was not included in the report of 1880.

b This item was not fully reported in 1880.

c Items under this head were not reported in 1880.

d Not separately reported in 1880.

e Included in group "All other states, 1880."

f Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Maine, 1; Michigan, 1; Missouri, 1; North Carolina, 1; Virginia 1.

g Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Kansas, 1; Maine, 1; Missouri, 1; New Hampshire, 1; Rhode Island, 1; Vermont, 1.

TABLE 1.—COMPARATIVE STATEMENT FOR THE UNITED STATES, BY STATES: 1890 AND 1880—Continued.

STATES.	Years.	MACHINERY—continued.				AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.					COST OF MATERIALS USED.	
		Power looms—Continued.	Spindles.			Aggregates.		Males above 16 years.	Females above 15 years.	Children.	Raw silk and silk materials.	Other textile materials.
		Total on ribbons and other narrow goods.	Winding, cleaning, and doubling.	Spinning and twisting.	Braiding.	Average number.	Total wages.					
The United States	1890	5,956	369,035	718,360	167,403	50,913	$19,680,318	18,998	29,049	2,866	$46,351,200	$2,327,684
	1880	2,218	164,218	262,312	81,607	31,337	9,146,705	9,375	16,396	5,566	19,208,683	1,400,480
California	1890	1	799	2,018	29	214	83,566	56	156	2	123,406	13,303
	1880	.....	200	150	754	151	41,400	20	106	25	66,418	3,500
Connecticut	1890	319	45,402	84,262	11,492	5,081	2,006,804	1,649	3,309	123	5,723,328	78,485
	1880	155	35,353	53,472	.....	3,428	1,026,530	785	1,990	653	3,025,325	12,000
Illinois	1890	44	363	369	221	805	295,636	198	597	10	155,931	111,978
	1880	13	.....	.....	.....	259	72,195	67	135	57	73,829	9,500
Maryland	1890	14	6	.....	.....	75	24,233	31	44	.....	29,530	2,799
	1880	.....	.....	.....	.....	82	11,000	12	56	14	11,630	2,980
Massachusetts	1890	90	26,235	55,200	30,403	3,216	1,296,399	1,192	1,936	88	2,861,697	156,120
	1880	88	13,514	16,936	11,000	1,926	521,725	353	1,285	188	1,730,870	161,815
New Jersey	1890	2,341	135,160	224,204	19,366	17,917	7,176,180	8,184	8,834	899	17,191,845	228,811
	1880	939	76,037	134,746	33,429	12,549	4,177,745	4,696	5,360	2,493	8,664,835	83,400
New York	1890	2,050	62,197	92,772	72,635	13,151	5,584,399	4,857	8,014	280	8,571,281	936,248
	1880	552	27,707	39,564	22,784	9,633	2,590,025	2,405	5,459	1,769	4,333,485	730,530
Ohio	1890	.....	96	.....	.....	40	13,685	10	30	.....	8,335	5,488
	1880	.....	.....	.....	.....	135	12,550	21	73	41	14,845	2,075
Pennsylvania	1890	1,054	89,429	228,786	30,217	9,522	2,981,334	2,604	5,625	1,293	10,875,625	794,350
	1880	471	9,497	15,744	6,864	3,189	678,120	1,000	1,870	319	1,207,795	394,680
Rhode Island	1890	43	930	2,463	40	194	61,978	55	109	30	147,015	.....
	1880	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states	1890	.....	8,418	28,286	3,000	698	156,104	162	395	141	663,207	102
	1880	.....	1,910	1,700	6,776	85	15,415	16	62	7	79,660	.....

STATES.	Years.	COST OF MATERIALS USED—continued.							VALUE OF PRODUCTS.		
		Dyestuffs, chemicals, oil, and soap.	Fuel.	Rent of power and heat.	All other materials.	Gross cost of materials.	Silk material twice included.	Cost of net materials. (a)	Gross value of products	Silk product twice included.	Value of net products. (a)
The United States	1890	$717,111	$400,107	$85,409	$1,122,914	$51,004,425	$15,537,520	$35,466,905	$87,298,454	$18,143,855	$69,154,599
	1880	828,314	173,283	.....	856,941	22,497,701	3,898,535	18,569,166	41,033,045	6,513,322	34,519,723
California	1890	458	102	1,734	7,403	146,406	3,500	142,906	271,912	5,600	266,312
	1880	3,552	2,355	.....	5,170	80,995	14,595	66,400	159,175	28,470	130,705
Connecticut	1890	204,864	73,134	3,400	118,665	6,201,876	889,756	5,312,120	9,788,951	1,665,390	8,123,561
	1880	115,040	41,993	.....	117,148	3,311,206	295,190	3,016,016	5,881,000	442,925	5,438,075
Illinois	1890	4,727	1,725	1,740	38,754	314,855	.....	314,855	785,845	.....	785,845
	1880	.....	.....	.....	42,575	125,895	.....	125,895	244,150	.....	244,150
Maryland	1890	6	205	.....	1,765	34,305	.....	34,305	100,361	.....	100,361
	1880	1,150	.....	.....	.....	15,760	.....	15,760	35,415	.....	35,415
Massachusetts	1890	69,976	48,149	870	115,081	3,251,893	746,175	2,505,718	5,557,569	945,610	4,611,959
	1880	64,725	15,775	.....	17,330	1,990,515	121,000	1,869,515	3,764,260	273,167	3,491,093
New Jersey	1890	155,650	143,132	33,453	155,992	17,908,883	5,205,501	12,703,382	30,760,371	5,354,389	25,405,982
	1880	482,472	78,548	.....	369,281	9,678,536	2,502,400	7,176,136	17,122,230	4,271,185	12,851,045
New York	1890	117,735	63,990	33,739	451,825	10,174,818	1,318,742	8,856,076	19,417,796	1,681,481	17,736,315
	1880	109,430	24,167	.....	134,192	5,331,804	533,600	4,798,204	10,170,140	802,115	9,368,025
Ohio	1890	.....	.....	.....	160	13,983	.....	13,983	33,927	.....	33,927
	1880	.....	.....	.....	2,575	19,495	.....	19,495	53,110	.....	53,110
Pennsylvania	1890	137,347	63,502	9,473	214,092	12,094,389	7,017,604	5,076,785	19,357,546	7,953,323	11,404,223
	1880	50,975	10,265	.....	167,270	1,830,985	404,000	1,426,985	3,491,840	638,675	2,853,165
Rhode Island	1890	998	.....	1,000	750	149,763	68,242	81,521	229,062	94,062	135,000
	1880	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states	1890	25,350	6,168	.....	18,427	713,254	288,000	425,254	995,114	444,000	551,114
	1880	970	480	.....	1,400	82,510	27,750	54,760	111,725	56,785	54,940

(a) See explanation, page 222.

The following summaries show the value of net production in the various classes of goods manufactured as reported at the census periods of 1880 and 1890:

VALUES OF FINISHED GOODS FOR THE CENSUS YEAR 1880.

Total	$34,519,723
Sewing silk	776,120
Machine twist	6,007,735
Floss silk	225,025
Dress goods	4,115,205
Satins	1,101,875
Tie silks and scarfs	606,675
Millinery silks	891,955
Other broad goods	627,595
Handkerchiefs	3,881,590
Ribbons	6,023,100
Laces	437,000
Braids and bindings	999,685
Fringes and dress trimmings	4,950,275
Cords, tassels, passementeries, and millinery trimmings	1,866,575
Upholstery and military trimmings	1,392,355
Coach laces and carriage trimmings	37,510
Undertakers', hatters', and fur trimmings	59,805
Mixed goods and silk values therein	519,643

VALUES OF FINISHED GOODS FOR THE CENSUS YEAR 1890.

Total	$69,154,599
Machine twist and sewing silk	7,068,213
Fringe, knitting, embroidery, and floss silk	1,849,631
Dress goods, figured and plain	15,183,134
Tailors' linings	3,011,437
Tie silks and scarfs	919,919
Other broad goods	1,928,036
Handkerchiefs	1,913,224
Ribbons	17,081,447
Laces	261,750
Braids and bindings	2,771,382
Velvets and plushes	3,141,026
Upholstery goods:	
Curtains	471,324
Tapestries	1,330,287
Other upholstery broad goods	1,910,721
Gimps and trimmings	3,918,209
Dress and cloak trimmings	4,403,757
Military trimmings	232,600
Hosiery and knit goods:	
Shirts and drawers	26,421
Hosiery	141,183
Mittens, gloves, etc	897,904
Jersey cloth	90,664
Other products	602,330

The values stated in the foregoing summaries represent the value of the product at the factory. The term "net production" signifies the quantity and value of finished goods after allowance has been made for materials "twice included", which is fully explained hereafter in this report.

From the foregoing summaries it will be seen that the value of net production increased from $34,519,723 in 1880 to $69,154,599 in 1890, an increase of $34,634,876, or 100.33 per cent. In considering these figures, however, the fact should be borne in mind that, although values had declined not less than 25 per cent, as estimated by competent authorities, the amount of production in quantities shows a very marked increase.

Tables 2 and 3 show the quantities of silk goods produced in 1880 and 1890, but in this respect the report for the census of 1880 furnished a small basis for comparison with the more comprehensive report prepared for the census of 1890.

TABLE 2.—QUANTITIES OF SILK PRODUCTS: 1880.

STATES.	SEWINGS AND TWIST.	BROAD GOODS AND HANDKERCHIEFS.	RIBBONS AND LACES.	TRIMMINGS AND SMALL GOODS.
	Pounds.	Yards	Yards.	Pounds.
The United States	821,528	10,856,284	30,129,951	710,149
California	9,500			4,650
Connecticut	394,981	2,253,070	8,541,235	695
Illinois				12,220
Kansas			3,600	
Maine	4,225			
Maryland				1,784
Massachusetts	273,816	99,120	573,320	39,789
Missouri				65
New Hampshire	1,300			300
New Jersey	25,580	6,975,655	8,794,100	50,405
New York	88,765	1,427,439	10,302,696	403,330
Ohio				2,187
Pennsylvania	23,110	101,000	1,915,000	192,824
Rhode Island				1,900
Vermont	251			

TABLE 3.—QUANTITIES OF SILK PRODUCTS: 1890.

STATES.	Number of establishments.	SEWINGS AND TWIST. (a)	BROAD GOODS AND HANDKERCHIEFS. (b)				RIBBONS AND LACES.	TRIMMINGS AND SMALL GOODS. (c)					
		Pounds.	Yards.	Square yards.	Pairs.	Dozens.	Pieces.	Pieces.	Yards.	Dozens.	Gross.	Pairs.	Pounds.
The United States	472	1,449,462	30,171,673	4,642,820	71,049	393,902	25,737,211	5,201,128	217,944	491,512	190,984	2,000	1,140
California	9	18,829						64,060	7,944	1,105	160		
Connecticut	35	770,428	2,747,420	675,117	1,904	5,717	872,783	64,942		3,750	18,341		
Illinois	10			1,000				265,024	75,000		1,000	2,000	
Maryland	4						33,290	11,609					
Massachusetts	20	390,683	744,383					331,727		11,395	1,698		1,140
New Jersey	132	44,568	18,180,072	514,295	13,820	386,520	14,629,214	164,036	500	45,936	62,000		
New York	185	44,168	4,795,552	726,474	44	1,665	8,447,441	3,276,284	94,500	408,577	106,618		
Ohio	3							11,260					
Pennsylvania	66	144,173	3,431,093	2,725,934	55,281		1,664,608	983,915		20,749	1,167		
Rhode Island	3						89,875		40,000				
All other states (d)	5	36,613	273,153					28,280					

a Includes 329,637 pounds of "fringe, knitting, embroidery, and floss silk", divided as follows: California, 4,515; Connecticut, 121,177; Massachusetts, 75,658, New Jersey, 27,593; New York, 3,779; Pennsylvania, 81,915; "All other states", 15,000.

b Includes in "Broad goods" the following: dress goods, figured and plain; tailors' linings, tie silks and scarfs, "Other broad goods", tapestries, curtains; velvets and plushes, and "Other upholstery broad goods".

c Includes gimps and trimmings, braids and bindings, dress and cloak trimmings, military trimmings, hosiery and knit goods, and jersey cloth. (Jersey cloth as follows: United States, 75,444 yards, viz., California, 444, and New York, 75,000.)

d Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Maine, 1; Michigan, 1; Missouri, 1; North Carolina, 1; Virginia, 1.

DEVELOPMENT OF SILK MANUFACTURE.

In addition to what has been shown regarding the increase in both value and quantity of production during the past decade, a very great advance has ensued in the development of the manufacture through the production of new classes of goods, as well as the consequent increased employment of silk fabrics for many uses previously unknown.

In the meantime the great improvement and increased beauty and variety of designs in our figured silk fabrics attest the rapid advance made in the domestic industry, while qualities have steadily improved in nearly every direction, notwithstanding the decline in prices. Among other noteworthy features distinguishing the past decade may be mentioned the spread of the industry through the establishment of mills at numerous points outside the

recognized seats of the industry in 1880; the almost absolute retirement of the hand loom in weaving broad goods and ribbons, the marked decline in the price of raw silk, and the great improvement in nearly every department of machinery and appliances. The latter feature has led to increased economy in manufacture and larger diversification of product, there being in fact scarcely any class of silk goods required by American consumers not now produced in this country and upon American looms.

Last, but not least, may be mentioned the ascendency in volume of domestic silk fabrics over imported goods. The percentages of silk goods made in the United States, as compared with the whole consumption of such goods in the country at the past four censuses are as follows:

	PER CENT.
1860	13
1870	23
1880	38
1890	55

Each of the features above noted is of sufficient importance to merit more extended reference, since all are factors in the history of the past decade; further allusion will be made to them elsewhere in this report.

SEWING SILK AND MACHINE TWIST.

Taking up in detail the more important lines of the manufacture, consideration may properly be first given to the oldest, that of sewing silk. Previous to 1810 this production, as well as such other manipulation of silk as then existed in the United States, was a household industry. The erection in that year at Mansfield, Connecticut, of a small 1-story frame building, 12 feet square (still standing), and the employment of a water wheel as the motive power for the single crude spinning frame which it contained, may justly be considered the inauguration of silk manufacture as a factory industry in this country. At the census of 1850 the value of sewing silk production had grown to $1,209,426 out of a total value of $1,809,476 for all silk goods manufactured. The adaptation of silk thread or twist for use on the sewing machine, occurring in 1852, created the new classification of "machine twist" and gave immense impetus to this branch of silk industry. At the census of 1880 its production amounted in value to $6,783,855, sewing silk being credited with $776,120 and machine twist with $6,007,735. At the census of 1890 the returns for the two items were consolidated, the total value produced in that year being $7,068,213, an increase of $284,358, or 4.19 per cent. That this increase in value of production was not larger resulted from a decided falling off in price during the past decade. The weight produced in 1880 was 791,525 pounds (*a*), while in 1890 it was 1,119,825 pounds (*b*), an increase of 328,300 pounds, or 41.48 per cent. The ever increasing use of the sewing machine has fully sustained this industry, so that the manufacture of machine twist is at present one of great importance. The manufacture of this class of goods, as in 1880, is more extensively carried on in the states of Massachusetts and Connecticut than elsewhere.

FRINGE, KNITTING, EMBROIDERY, AND FLOSS SILKS.

Fringe, knitting, embroidery, and floss silks are produced by the manufacturers of spun silk and machine twist and sewing silks, and the product has been developed largely since the Tenth Census. The returns for 1880 showed a value in product of floss silk of $225,025, including fringe, knitting, and embroidery silks. In 1890 the value of the combined production aggregated $1,849,631, an increase of $1,624,606, or 721.97 per cent, having kept pace with the largely increased demand for this class of goods for use in art decoration and other purposes.

BROAD SILKS.

The generic or commercial term of "broad silks" is applied in this report to all silk woven fabrics other than handkerchiefs, ribbons, velvets and plushes, upholstery goods, and trimmings of the character designated in the classification hereinafter shown. To better illustrate the growth of this branch of the industry historical reference becomes necessary. Previous to 1840 little, if anything, had been accomplished therein save as a household industry. In that year a start in a small way was made at Paterson, New Jersey, but the insignificant growth of broad silk weaving in the decade following is shown by the returns for the census of 1850, which reported the value of "silk cloth" produced at $17,050. At the census of 1860 no mention whatever was made of this class of production. During the war the production was greatly stimulated, owing in part to frequent deficiencies in the foreign supply and in part to the excessive cost due to the high price of gold, which greatly checked importation. At the close of the war (in 1865) the weaving of broad silks had attained considerable importance and may be regarded as having then become firmly established. Hence very nearly all that has been achieved in this branch

a The total quantity of sewings and twist produced in 1880, reported at the Tenth Census, was 821,528 pounds, but in this amount was included floss silk (which also embraced fringe, knitting, and embroidery silk) to the value of $225,025. The average value of this latter product in that year may be placed at $7.50 per pound, which would give 30,003 pounds as the amount of production, leaving 791,525 pounds as the amount of machine twist and sewing silk produced.

b It will be seen by reference to footnote *a* in Table 3, showing "quantities of silk products: 1890", that from the total of 1,449,462 pounds given for sewings and twist 329,637 pounds of fringe, knitting, embroidery, and floss silk should be deducted, leaving 1,119,825 pounds as the production of machine twist and sewing silks.

of industry has been accomplished within the past twenty-five years. The returns of the Ninth Census reported an annual production of 1,026,422 yards, the value not being given. The value of production reported at both the Tenth and Eleventh Censuses is shown herewith:

BROAD SILKS.

PRODUCTS.	1880	1890
Total	$7,343,305	$21,042,526
Dress goods	4,115,205	15,183,134
Satins	1,101,875	
Tailors' linings		3,011,437
Tie silks and scarfs	606,675	919,919
Millinery silks	891,955	
Other broad goods	627,595	1,928,036

It will thus be observed that the total value of production in this branch of silk industry in 1890 amounted to $21,042,526, an increase over 1880 of $13,699,221, or 186.55 per cent. Allusion has already been made to the great progress within the past decade in the whole industry in a more extended range of production, and nowhere does this more aptly apply than in the domain of broad silk weaving. The classification is now, in fact, almost illimitable, practically embracing everything made in other and older silk manufacturing countries, while in quality of weave, combination of colors, beauty of design, and excellence of finish the manufacturers are able to meet all requirements. In the meantime, also, values have experienced a great decline, and prices to consumers are much below those prevailing at the time of the Tenth Census.

HANDKERCHIEFS.

The handkerchief production stands almost singly in showing a decline in the value of goods manufactured, having decreased from $3,881,590 in 1880 to $1,913,224 in 1890, a difference of $1,968,366, or 50.71 per cent. This results from the decided change which has occurred during the decade, especially within the past four or five years, in the requirements of the purchasing trade, the tendency being adverse to the class of goods made on American looms, particularly figured effects, and favoring those of oriental production, of which the importation into this country, especially from Japan, has recently grown to large proportions.

RIBBONS.

The development of ribbon manufacture during the past decade has been exceedingly rapid. Its production of $17,081,447 in 1890 stands second in value to that of broad silks, while it exceeds that of dress silks by the sum of $1,898,313. In 1880 the value of ribbons manufactured was reported at $6,023,100. The increase shown by the Eleventh Census is $11,058,347, or 183.60 per cent. Previous to 1861 a few feeble and insignificant efforts were made at various points toward producing this class of goods, but it was not until the commercial exigencies created by the civil war that, similarly to broad silks, ribbon production obtained as a permanent domestic industry, the first mill of real importance having been established at Williamsburg, New York, in 1863. In 1870 the Ninth Census showed a production of 3,224,264 yards, and from that date the progress of this branch of the industry has been marked. The remarks made concerning broad silks apply with equal force to ribbons in both diversification and excellence of product. Goods of a character and beauty the production of which ten years ago the manufacturer would have hardly ventured to predict would be attempted within that period now constitute a large portion of the regular output, while the exceedingly low prices at which they are offered to consumers has created a demand for their use for many purposes never before contemplated.

LACES.

The production of laces for dress and millinery purposes shows a falling off from $437,000 in 1880 to $261,750 in 1890, a decrease of $175,250, or 40.10 per cent. A considerable portion of the decrease can be attributed to the fact that under the Tenth Census lace mitts were classified as laces, while under the Eleventh Census they are included with mittens and gloves.

BRAIDS AND BINDINGS.

In braids and bindings the returns show a value in production of $2,771,382 in 1890, against $999,685 in 1880, an increase of $1,771,697, or 177.23 per cent. In 1880 (fiscal year) the invoice value of this class of goods imported into the port of New York amounted to $1,323,437, and in 1890 it was $1,707,154.

VELVETS AND PLUSHES.

The manufacture of velvets and plushes, with a product in 1890 valued at $3,141,026, has come into existence since the Tenth Census. No separate classification of the two items is made in the summary showing the value of production, but the value of the output of plushes largely exceeds that of velvets. The velvets produced here have been mostly utilized for millinery and dress trimming purposes, while the plushes are largely employed in upholstery. So far only plain goods, made of "schappe" or spun silk with cotton backs, have been manufactured here, no production having been attempted of the high figured effects in both lines, such as are seen among the artistic creations of the Lyons weavers or of the foreign rich all-silk plain velvets.

UPHOLSTERY GOODS.

Under the general head of "Upholstery goods" the summary for 1890 shows the following values of goods produced composed of silk, or of which silk was the component material of chief value: curtains, $471,324; tapestries, $1,330,287, and other upholstery broad goods, $1,910,721; a total of $3,712,332. At the Tenth Census no mention was made of goods of this character; the industry has made rapid progress within the past decade, especially in the city of Philadelphia, the chief center for this class of silk goods. Curtains largely made of silk, but with some admixture of cotton, are now offered to consumers at a less price than were "all cotton" goods ten years ago, while tapestries, principally used in furniture coverings, are fully 30 per cent cheaper and of much better design and quality. Equally in "Other upholstery broad goods", such as brocatelles, light silk damasks for draperies, silk chenilles, etc., the improvement has been exceedingly rapid. The goods produced are sold at lower prices than ever before, and the industry is capable, under favorable conditions, of much larger expansion and diversification of product.

TRIMMINGS.

The variance in classification in the summaries of finished production between the Tenth and Eleventh Censuses renders it somewhat difficult to make a correct detailed comparison. This is especially so in the item of trimmings. The following statement, however, is presented:

PRODUCTS.	1880	1890
Upholstery and military trimmings	$1,392,355	.....
Coach laces and carriage trimmings	37,510	.....
Total	1,429,865	.....
Upholstery gimps and trimmings	.....	$3,918,209
Military trimmings	.....	232,600
Total	.....	4,150,809
Fringes and dress trimmings	4,950,275	.....
Cords, tassels, passementerie, and military trimmings	1,866,575	.....
Undertakers (*a*), hatters', and fur trimmings	59,805	.....
Total	6,876 655	.....
Dress and cloak trimmings	.....	4,403,757

a Undertakers' trimmings should properly be classed with "Upholstery trimmings", but in 1880 they were classed with "Hatters' and fur trimmings".

This statement shows that the reported value of the entire production of trimmings in 1880 was $8,306,520, while in 1890 it was $8,554,566, an increase of $248,046, or 2.99 per cent, and that while the production of upholstery and military trimmings combined increased in the sum of $2,720,944, or 190.29 per cent, that of dress and cloak trimmings decreased $2,472,898, or 35.96 per cent. The decrease in the latter item can be attributed only to adverse fashions in the use of both dress and cloak trimmings, ribbons having largely taken their place for dress garniture, while plainer styles of cloaks were in favor. This class of goods is perhaps more at the mercy of the ever changing whims of fashion than any other line of the industry.

HOSIERY AND KNIT GOODS.

The manufacture of hosiery and knit goods, with its total production of $1,156,172, is practically a development of the past ten years, no separate mention of goods of this character having been made at the census of 1880. The industry is thriving and rapidly assuming importance, the goods produced being of the highest possible grade.

NUMBER OF ESTABLISHMENTS.

The census of 1880 reported 382 establishments engaged in the silk industry in that year, which included some of those employed exclusively in silk dyeing, finishing, etc., the number of which was less than in 1890. The number of establishments reported in 1890 was 472, being all silk manufacturing concerns, an increase of 90, or 23.56 per cent. To these should be added 52 establishments engaged exclusively in silk dyeing and finishing, making a total for the whole industry of 524 establishments, a net increase over 1880 of 142 establishments, or 37.17 per cent.

The following comparative statement for 1880 and 1890 shows, by states, the number of establishments engaged in the industry (including dyeing and finishing) and the increase or decrease in each:

STATES.	NUMBER OF ESTABLISHMENTS.		Increase.	Decrease.
	1880	1890		
The United States	382	524		
California	5	9	4	
Connecticut	28	36	8	
Illinois	5	11	6	
Kansas	1			1
Maine	1	1		
Maryland	4	4		
Massachusetts	22	20		2
Michigan		1	1	
Missouri	1	1		
New Hampshire	1			1
New Jersey	106	156	50	
New York	151	206	55	
North Carolina		1	1	
Ohio	6	3		3
Pennsylvania	49	71	22	
Rhode Island	1	3	2	
Vermont	1			1
Virginia		1	1	

The following statement, reproduced from the report on "The Dyeing and Finishing of Textiles", shows the number of establishments, amount of capital, miscellaneous expenses, average number of employés and their wages, power used, cost of materials used, and total value of work done in establishments devoted exclusively to dyeing and finishing silk goods and yarns:

ESTABLISHMENTS ENGAGED EXCLUSIVELY IN DYEING AND FINISHING SILK GOODS AND YARNS.

STATES.	Number of establishments.	CAPITAL.		Miscellaneous expenses.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES. (*a*)				
		Value of hired property.	Direct investment.		Aggregates.		Males above 16 years.	Females above 15 years.	Children.
					Average number.	Total wages.			
The United States	52	$487,933	$1,880,224	$177,933	1,745	$1,013,325	1,639	102	4
New Jersey	24	193,800	1,313,306	123,607	1,292	744,059	1,233	57	2
New York	21	285,133	466,505	47,706	391	230,034	344	45	2
All other states (*b*)	7	9,000	100,413	6,620	62	39,232	62		

STATES.	HORSE POWER.			COST OF MATERIALS USED.					Value of work done.
	Steam.	Water.	All other.	Total.	Chemicals and dyestuffs.	Fuel.	Rent of power and heat.	All other materials.	
The United States	1,513	21	10	$1,276,926	$1,092,192	$83,475	$4,675	$96,584	$2,935,101
New Jersey	777		10	1,127,346	987,957	70,582	600	68,207	2,333,716
New York	545			111,129	75,012	9,498	4,075	22,544	478,637
All other states	191	21		38,451	29,223	3,395		5,833	122,748

a Includes officers, firm members, and clerks.

b Includes states grouped, in order that the operations of individual establishments may not be disclosed. These establishments were distributed as follows: Connecticut, 1; Illinois, 1; Pennsylvania, 5.

LOCATION OF SILK MILLS.

Allusion has been made to the spread of the industry during the past decade through the establishment of mills at numerous points outside the recognized centers of the industry in 1880.

A large portion of the spread of the industry to new points has resulted from the location by manufacturers elsewhere engaged therein of "annex" establishments devoted mainly to the "throwing" branch, in which women and children are principally employed, the work being of the lightest kind. This has occurred notably in the state of Pennsylvania, where, in addition to a plentiful supply of otherwise unemployed labor of the character mentioned, fuel is comparatively cheap. The location of mills in this state, as well as in some instances in other states, has, furthermore, been greatly stimulated by the financial inducements offered by various towns, the citizens of which have wished to secure an industry in their localities furnishing light, agreeable, and remunerative employment. Hence liberal subscriptions have been made toward the erection of mills. While these isolated establishments, as a rule, were at the first mere "annexes" devoted to the "throwing" of material to be woven at the parent establishment in one or another of the chief centers of the manufacture, weaving was later also entered upon, while especially among those established in the latter half of the past decade there are a number of well equipped factories, embracing all the branches, from the spindle to the loom.

The question of advantage or disadvantage of an isolated location presents a problem which has been widely discussed. On the one side are cheaper fuel, cheaper help, lower taxes, less expense for factory space, etc., while on the other there are the advantages of proximity to market, to expert textile machinists, and to depots for all manner of supplies, and also of having trained employés, who can hardly be induced to remove to country towns, where almost all the operatives must first be instructed in their several tasks. But whatever the advantages or disadvantages of a remote location, the "throwsters" at the principal centers have found it difficult to compete with these outside establishments, the difference in wages alone being a most important factor.

CAPITAL.

The returns for capital are far more complete at the Eleventh Census than any previously obtained, embracing in detail the "Live assets" and also the "Value of hired property", while at the Tenth Census they were largely confined to the actual investments of manufacturers, and did not include the "Value of hired property", which under the Eleventh Census aggregates $10,355,160, making a total of $61,362,697. In making comparisons with the Tenth Census this amount is omitted. Direct investment in 1890 amounts to $51,007,537 (*a*), as against $19,125,300 in 1880, an increase of $31,882,237, or 166.70 per cent. The items of "Value of land and buildings" and "Total value of machinery" are the only ones with which the returns of 1880 can be fairly compared. The value of land and buildings increased from $3,836,600 in 1880 to $6,904,628 in 1890, an increase of $3,068,028, or 79.97 per cent, while the value of the machinery employed increased from $5,227,500 in 1880 to $14,181,680 in 1890, an increase of $8,954,180, or 171.29 per cent. In 1880 the combined value of land and buildings and machinery was $9,064,100, leaving $10,061,200 as the amount otherwise included as capital, the respective percentages of the above to the whole sum of $19,125,300 being 47.39 and 52.61. In 1890 the combined value of the same items was $21,086,308, leaving $29,921,229 as the amount otherwise included as capital, the respective percentages to the whole sum of $51,007,537 being 41.34 and 58.66. In 1880 the value of finished goods produced for each dollar of capital invested was $1.80, and in 1890 it was $1.36. Although these figures apparently show that the producing capacity of capital was smaller in 1890 than in 1880, the fact that "Live assets" were more fully reported under the Eleventh than under the Tenth Census, and the great decline in prices of products, already alluded to, should be considered in this connection. A careful analysis of these two items will demonstrate that the ratio of production to capital in 1890 was considerably larger than in 1880.

EMPLOYÉS AND WAGES.

The returns show that the average number of employés in 1890 was 50,913 (*b*), while in 1880 it was 31,337, the increase amounting to 19,576, or 62.47 per cent.

The following statement shows the increase or decrease in number and percentage of males, females, and children employed in 1890 as compared with 1880:

AVERAGE NUMBER OF EMPLOYÉS.	1890	1880	INCREASE.		DECREASE.	
			Number.	Per cent.	Number.	Per cent.
Males above 16 years	18,998	9,375	9,623	102.65		
Females above 15 years	29,049	16,396	12,653	77.17		
Children	2,866	5,566			2,700	48.51

a In addition to these amounts, 52 establishments engaged exclusively in dyeing and finishing silk goods and yarn in 1890 report "hired property" to the value of $487,933 and a direct investment of $1,880,224.

b To these amounts should be added 1,745 employés and $1,013,325 wages, reported by 52 establishments engaged in dyeing and finishing silk goods and yarn, making the total number of employés in the silk industry 52,658, to whom $20,693,643 was paid in wages.

Notwithstanding the growth of the industry, the decrease in the number of children employed is very noticeable, being largely due to the stringent laws which have been enacted during the decade in several states regulating the employment of children in factories.

The total amount paid in wages in 1890 was $19,680,318 (*a*), as against $9,146,705 in 1880, an increase of $10,533,613, or 115.16 per cent.

The following comparative statements show the rates of wages paid per week to classified operatives in 1880 and 1890. It is proper to mention, however, that only 65 per cent of the establishments made detailed reports on this subject in 1890.

RATES OF WAGES PER WEEK TO CLASSIFIED OPERATIVES: 1880.

CLASSES OF OPERATIVES.	Males.	Females.	CLASSES OF OPERATIVES.	Males.	Females.
Raw silk winders	.....	$5.25	Lace machine operators	$14.75	.....
Raw silk cleaners	.....	3.37	Braid machine operators	16.00	.....
Raw silk doublers	.....	5.18	Braiders	.....	$5.41
Raw silk spinners	$5.57	4.87	Passementerie spinners	17.73	12.00
Raw silk twisters	5.98	5.67	Fringe knotters	.....	5.30
Raw silk reelers	.....	4.50	Tassel makers	.....	5.29
Soft silk doublers	.....	4.00	Finishers	13.50	.....
Soft silk winders	.....	6.35	Designers (*c*)	24.71	.....
Soft silk spoolers	.....	4.96	Card cutters (*d*)	11.68	.....
Soft silk warpers	10.71	7.62	Dyers (*e*)	12.77	.....
Quillers and quill winders	.....	4.00	Engineers	12.33	.....
Soft silk beamers	12.11	7.72	Machinists	12.40	.....
Soft silk warp twisters	13.96	.....	Loom fixers	15.87	.....
Hand loom weavers (*b*)	14.15	8.44	Laborers	8.73	.....
Power loom weavers (*b*)	11.43	7.94			

RATES OF WAGES PER WEEK TO CLASSIFIED OPERATIVES: 1890.

CLASSES OF OPERATIVES.	Number of establishments.	Males.	Females.	Children.
Raw silk winders	126	.....	$5.24	$3.10
Raw silk cleaners	18	.....	4.71	2.93
Raw silk doublers	111	.....	5.07	3.03
Raw silk spinners	96	$6.70	4.85	3.58
Raw silk twisters	68	7.52	5.25	3.15
Soft silk winders	193	.....	6.31	3.34
Soft silk spoolers	123	6.09	5.71	3.56
Soft silk warpers	142	13.60	8.74	3.25
Soft silk beamers	56	11.26	9.40	.....
Soft silk warp twisters	91	13.35	10.00	.....
Hand loom weavers	59	14.09	8.52	.....
Power loom weavers:				
Broad goods	108	11.16	9.04	.....
Ribbons	79	15.74	11.28	.....
Braiding machine operatives	30	8.48	6.00	.....
Knitting machine operatives	14	16.00	8.00	.....
Lace machine operatives	4	13.00	.....	.....
Designers	17	23.18	16.50	.....
Card cutters	25	15.05	8.50	.....
Dyers	16	16.00	.....	.....
Finishers	58	13.87	10.12	.....
Laborers	10	9.29	4.50	.....
Other operatives	82	12.34	6.89	3.95

a See note *b* on page 210.

b There is a very great difference in the size of looms for different kinds of goods. The highest rates to power loom weavers are paid to those employed on the large looms used in fringe and trimming manufactures.

c The designer is sometimes also the superintendent.

d The card cutter is sometimes also the designer.

e The chief dyer receives from $20 to $30.

MACHINERY.

BROAD GOODS LOOMS.

Allusion has heretofore been made to the decrease in the employment of hand looms within the past census decade. In 1880 the total number of looms reported in use for weaving broad goods was 4,732; of this number 1,629 were hand looms and 3,103 power looms. In 1890 but 413 hand looms were reported in use, the decrease being 1,216, or 74.65 per cent. In 1880 the respective percentages of hand and power looms employed in this branch were 34.43 and 65.57. In 1890 the total number of broad looms employed was reported at 15,279, of which 413 were hand looms and 14,866 power looms, the total increase over 1880 being 10,547, or 222.89 per cent; of this number 14,866 were power looms, the increase in these being 11,763, or 379.08 per cent. In 1890 the respective percentages of hand and power looms employed in this branch were 2.70 and 97.30.

NARROW GOODS LOOMS.

In 1880 the total number of looms employed in the combined production of ribbon and other narrow goods (no subclassification being made) was 3,742; of this number 1,524 were hand looms and 2,218 power looms. In 1890 1,334 hand looms were reported in use, the decrease being 190, or 12.47 per cent. In 1880 the respective percentages of hand and power looms employed in this branch were 40.73 and 59.27. In 1890 the total number of looms engaged in this branch was reported at 7,290, of which 1,334 were hand looms and 5,956 power looms, the total increase over 1880 being 3,548, or 94.82 per cent. Of the total number, 5,956 were power looms, the increase being 3,738, or 168.53 per cent. Of these 5,956 power looms 4,389 were reported as engaged in the production of ribbons and 1,567 on "Other narrow goods". In 1890 the respective percentages of hand and power looms employed in this branch were 18.30 and 81.70.

Adding together the looms for broad goods and narrow goods, it is found that the total number of hand looms employed in 1880 was 3,153 and of power looms 5,321, making an aggregate of 8,474, while in 1890 there were 1,747 hand looms and 20,822 power looms, an aggregate of 22,569, showing an increase in the latter year of 14,095 looms, or 166.33 per cent. The respective percentages of hand and power looms employed in 1880 were 37.21 and 62.79; in 1890 they were 7.74 and 92.26.

These figures furnish ample warrant for the statement that the hand loom is now a factor of but little importance in silk manufacture; in fact, for weaving broad goods and ribbons but few were in operation at the Eleventh Census. A comparatively small number are employed in making patterns, bookmarks, and badges, while others are engaged in weaving fine veilings, tissues, or other special productions, but the larger proportion is employed in the trimmings branch. This falling into desuetude of the hand loom has been a natural result of the progress of the decade, high speed and the most economical methods having become matters of paramount importance, while the marvelous advance in perfected power driven machinery, on which the most difficult classes of work, including even swiveled effects, can now be executed, has rendered it obsolete, except for the few special purposes indicated.

Referring to the great advance in machinery and appliances employed in silk manufacture, it should be stated that while considerable progress had been made in this department prior to the Tenth Census great and vitally important improvements have since been achieved in all classes of silk machinery. Especially is this the case in power looms for weaving both broad and narrow goods, which have been brought to a high degree of perfection, the natural effect of which has not only lessened the cost of production but resulted in the manufacture of a higher class of fabrics of a character in many instances never before attempted in this country.

Among the most important improvements in this direction is the adaptation of the swivel loom attachment to the power loom. This loom produces swivel or embroidered effects even more satisfactorily than was formerly achieved by the hand loom, which had been regarded hitherto as the only loom on which swivel work could be performed. The capacity of production by the power of the swivel loom is many times greater.

SPINDLES.

The following tabular statement shows the increase in the number of spindles of the various kinds employed in 1890 over 1880, together with percentages of such increase:

SPINDLES.	1890	1880	INCREASE.	
			Number.	Per cent.
Total	1,254,798	508,137	746,661	146.94
Winding, cleaning, and doubling	369,035	164,218	204,817	124.72
Spinning and twisting	718,360	262,312	456,048	173.86
Braiding	167,403	81,607	85,796	105.13

The speed of the modern spinning frame has been accelerated to an extent which some years since would have seemed almost impracticable. But a short time before the census of 1880 throwing machinery was introduced, the spindles of which made 10,000 revolutions per minute, which was almost double the speed previously attained. Subsequently 12,000, 15,000, and even more revolutions were achieved, but in time it was ascertained that there was a point beyond which no advantage was gained by increasing the speed, and hence the tendency of late has been rather toward reducing it, the results being generally more satisfactory. At present about 10,000 revolutions per minute for the "first time over" and about 7,500 revolutions for the "second time over" is the average speed at which spindles are operated on the latest improved machinery, while on frames of less modern construction the speed is very much lower, often not exceeding 5,000 or even 4,000 revolutions.

Equally, as in looms and spinning machinery, has there been a great improvement in all other mechanical appliances, such as winders, doublers, wrappers, quillers, and jacquard dobbies, the running speed of all of which has undergone large increase. The number and kinds of other mechanical accessories reported in use at the Eleventh Census are as follows: jacquard attachments, 5,905; sewing machines, 1,032; knitting machines, 245; lace machines, 78.

MATERIALS USED.

The gross cost of all materials and supplies consumed in 1880 was $22,467,701; in 1890 it was $51,004,425, an increase of $28,536,724, or 127.01 per cent. In 1890 the cost of raw silk and silk materials consumed constituted 90.88 per cent of the cost of all materials used; in 1880 it was 85.49 per cent. In 1890 the gross value of manufactured products was $87,298,454, the percentage of the gross cost of materials and supplies being 58.43 of the product, while in 1880 the percentage was 54.76. The cost of raw silk and silk material consumed in 1890 was $46,351,200. From this amount should be deducted the sum of $15,537,520 for silk material "twice included".

Silk material is "twice included" when it appears, first, as "raw silk" in the returns of a "throwster", and, secondly, as "thrown silk" or "fringe silk", reported as raw material in the return of a weaver or fringe maker. The value of silk products thus twice included is deducted from the gross value of production, leaving a result, which, it will be noticed, exactly agrees with the value of finished goods as shown by the returns. The reasons for this deduction are similar to those which apply to the values of the raw materials. While the gross value of production amounts to $87,298,454, it covers only a real value of product amounting to $69,154,599. It should be noted that the products of partial manufacture go for the most part to be finished to points other than those where they originate. Hence, in many cases, the gross production of a state more nearly represents its industry than would the value of its finished goods. For instance, the gross production of Pennsylvania, amounting to $19,357,546, is much nearer the total value of its silk manufactures than the sum of $11,404,223, the value of its completed goods, because a large portion of the thrown silk produced in that state is not made into goods there, but goes elsewhere for manufacture.

The reference to "thrown silks" justifies some allusion to the throwing branch of the manufacture. Raw silk as reeled from the cocoon differs from the fiber or filament forming the material for other textiles, in that while it is necessary to spin the latter down to a thread of sufficient fineness to weave, it becomes necessary in the use of raw silk to twist or "throw" together a number of the filaments sufficient to form a thread coarse enough to weave. Hence comes the word "throwster", an old English term by which those engaged in this preparatory process of the manufacture are designated, the warp and weft produced by them being known, respectively, as "organzine" and "tram", words derived from the French "organzin", meaning a double-twisted silk, and "tram", meaning weft. In establishments exclusively engaged in this branch the work is generally done on commission for other establishments engaged in weaving, the latter furnishing the raw stock. The returns for 1890 show about 44 establishments of this character, while, in addition, many weaving concerns possess their own throwing plants.

IMPORTS OF RAW SILK.

The following tabular statement exhibits the imports of raw silk by fiscal years from 1880 to 1890, inclusive, as reported by the bureau of statistics, Treasury Department, with number of pounds and value. The receipts of raw silk at the ports of New York and the Pacific coast are likewise presented in number of bales and cases since 1880, according to the records of the Silk Association of America. For purposes of comparison, the imports in the years 1850, 1860, 1870, and 1880 are also presented. Attention is directed to the marked increase in the importation of raw silk.

IMPORTS OF RAW SILK.

[From reports of the bureau of statistics, Treasury Department.]

YEARS.	Pounds.	Value.	Number of bales and cases received at the ports of New York and the Pacific coast.
1850	*a*120,010	$401,385	.....
1860	*a*297,877	1,340,676	.....
1870	583,589	3,017,958	.....
1880	2,562,236	12,024,699	21,741
1881	2,550,103	10,888,264	20,198
1882	2,879,402	12,890,392	21,682
1883	3,253,370	14,043,340	23,927
1884	3,222,546	12,481,496	23,067
1885	3,424,076	12,421,739	23,914
1886	4,754,626	17,232,505	32,997
1887	4,599,574	18,687,245	31,974
1888	5,173,840	19,151,208	36,108
1889	5,329,646	18,544,025	37,583
1890	5,943,360	23,285,099	43,766

a Estimated from current prices, only the value being on record.

The tendency during the last decade has been toward the increased use of finer grades of raw silk as a consequence of the better qualities of goods manufactured. This is demonstrated by the following comparative statement, which gives the valuation of imports of the different classes at the ports of New York and the Pacific coast, as shown by the records of the Silk Association of America (*a*), for the fiscal years 1889–1890 and 1882–1883. The first year for which this classification was kept was 1882–1883, and hence is the first classification that can be presented for comparison.

CLASSES.	1889–1890	1882–1883	INCREASE.	
			Value.	Per cent.
Strictly European	$6,060,776	$3,716,609	$2,344,167	63.07
Japan	12,499,498	6,379,115	6,120,383	95.94
Shanghai	3,491,579	2,768,323	723,256	26.13
Hongkong	2,603,108	1,823,537	779,571	42.75

Reference has been made to the decline which has taken place in the prices of raw silk. This decline may be estimated from the average prices current at the two fiscal years of 1880 and 1890, amounting to from 15 to 20 per cent, which is largely the result of the increased demand consequent upon the development of American manufacture and the stimulation of raw silk production thereby engendered in other countries.

a It will be observed that the valuation of the imports as given by the Silk Association of America in both the years mentioned somewhat exceeds that of the bureau of statistics, although the former does not include ports of entry other than those specified above. The amount brought in at other ports, however, is infinitesimal, while the figures of the bureau of statistics simply relate to the value of the raw silk at the place of export and do not include the expenses of shipping charges, commissions, freight, marine insurance, and the Japanese export duties, as do the estimates of the Silk Association of America.

WASTE SILK, PIERCED COCOONS, AND NOILS.

In addition to the imports of raw silk, the following statement, showing the imports of waste silk, pierced cocoons, and noils from 1880 to 1890, is presented. The manipulation of spun silk was in its infancy in this country ten years ago, but it has kept pace in the development of the industry with the use of reeled silk, and is a factor of no small importance.

IMPORTS OF WASTE SILK, PIERCED COCOONS, AND NOILS.

[From reports of the bureau of statistics, Treasury Department.]

YEARS.	Pounds.	Value.
1881	.....	$559,914
1882	.....	672,384
1883	1,477,736	1,099,812
1884	1,062,342	744,633
1885	884,832	464,490
1886	2,063 434	1,021,763
1887	1,428,517	950,840
1888	1,196,482	778,934
1889	1,315,478	787,885
1890	1,567,080	1,040,432

IMPORTATIONS OF GOODS.

The following comparative statement shows the value of silk goods, by classes, imported at the port of New York, by fiscal years, from 1881 to 1890, inclusive. The imports at New York comprise fully 95 per cent of the total value of silk imports. The largest importation in any year previous to 1881 was in 1872, amounting to $36,448,618. This table exhibits the classes and invoice value of silk goods of foreign manufacture consumed in the United States.

TABLE 4.—INVOICE VALUE OF SILK GOODS, BY CLASSES, IMPORTED AT THE PORT OF NEW YORK, BY FISCAL YEARS, FROM 1881 TO 1890, INCLUSIVE.

[Compiled by Mr. Briton Richardson, secretary of the Silk Association of America.]

ARTICLES.	1889-1890	1888-1889	1887-1888	1886-1887	1885-1886	1884-1885	1883-1884	1882-1883	1881-1882	1880-1881
Total	$36,766,090	$34,057,170	$31,455,215	$29,366,924	$26,147,635	$26,108,190	$34,039,697	$33,967,171	$36,432,706	$30,501,851
Silk piece goods	13,589,511	10,648,570	11,465,076	11,263,296	11,431.840	12,423,750	18,432,599	18,585,896	19,429,606	16,167,056
Satins	486,268	535,414	568,281	534,051	432,789	291,317	173,784	199,666	200,763	272,641
Crapes	126,452	160,472	230,689	247,174	403,763	404.730	473,568	479,962	536,277	489,560
Pongees	11,217	49,761	87,234	16,624	82.374	35,497	24,667	30,938	8,651	16,477
Plushes	2,774,728	4,110,335	3,516,248	2,153,209	1,414,727	1,485.902	1,260,706	875,785	1,121,990	495,496
Velvets	2,482,401	1,883,403	2,746,729	3,527,953	2,747,736	2,786,945	2,831,410	1,940,915	1,402,663	1,575,715
Ribbons	1,602,611	1,617,401	1,194,458	1,240,846	1,253,717	1,243,974	2,618,463	2,229,226	2,707,693	3,103,561
Laces	2,972,655	3,320,131	2,361,735	2,135,393	1,820,692	1,614,374	2,126,979	3,126,597	4,073,891	1,883,236
Shawls	172,854	180,215	193,669	184,606	106,590	138,495	63,654	6,810	7,790	17,466
Gloves	399,425	345,950	379,064	478,153	503,823	610,950	652,942	333,716	179,151	204,703
Cravats	87,144	98,840	83,989	62,971	33,015	18,763	21,095	69,455	60,341	69,914
Handkerchiefs	99,227	146,297	281,915	163,851	169,948	158,298	120,743	59,786	75,671	53,727
Hose	395,096	292,500	317,897	350,169	270,735	327,649	317,861	297,960	179,254	110,277
Threads and yarns	461,311	308,797	162,506	190,445	159,189	129,996	193,782	155,282	128,790	175,627
Braids and bindings	1,707,154	2,396,703	1,559,456	1,350,336	697,938	697,327	1,334,692	1,087,416	1,191,140	1,323,437
Silk and worsted	1,478,252	1,877,522	969,998	727,423	357,800	253,202	189,801	90,786	123,939	174,390
Silk and cotton	7,808,892	6,080,914	5,334,961	4,731,877	4,259,052	3,486,258	3,207,943	4,486,836	5,011,843	4,366,921
Silk and linen	20,892	3,945	2,210	8,547	1.907	1,663	4,008	1.039	2,253	1,644

Table 5 presents by state totals detailed information reported at the Eleventh Census under the general heads of "Capital", "Miscellaneous expenses", "Employés and wages", "Machinery", "Materials used", and "Value of products".

Tables 6 and 7 present the statistics of employés and wages in the various classes.

TABLE 5.—DETAILED STATEMENT FOR THE UNITED STATES, BY STATES: 1890.

STATES.	Number of establishments.	CAPITAL.									
		Value of hired property.	Direct investment.								
			Aggregate.	Value of plant.				Live assets.			
				Total.	Land.	Buildings.	Machinery, tools, and implements.	Total.	Raw materials.	Stock in process and finished products on hand.	Cash, bills and accounts receivable, and all sundries not elsewhere reported.
The United States	472	$10,355,160	$51,007,537	$21,086,308	$1,691,660	$5,212,968	$14,181,680	$29,921,229	$6,525,692	$15,879,617	$7,515,920
California	9	99,260	112,283	30,409	.....	.....	30,409	81,874	28,300	15,642	37,932
Connecticut	35	228,841	9,037,042	2,913,327	152,589	1,143,200	1,617,538	6,123,715	1,168,840	3,033,256	1,921,619
Illinois	10	326,164	422,096	199,200	33,000	60,000	106,200	222,896	84,950	39,000	98,946
Maryland	4	33,144	50,400	19,900	6,000	1,500	12,400	30,500	6,400	15,700	8,400
Massachusetts	20	306,542	3,353,296	956,708	77,300	287,500	591,908	2,396,588	277,583	1,019,195	1,099,810
New Jersey	132	2,225,314	16,809,927	7,209,643	590,919	1,579,160	5,039,564	9,600,284	2,110,441	5,892,607	1,597,236
New York	185	5,519,537	11,165,918	4,989,000	544,002	832,240	3,612,758	6,176,918	1,502,202	3,265,119	1,409,597
Ohio	3	11,000	37,830	16,750	10,000	5,000	1,750	21,080	6,800	4,100	10,180
Pennsylvania	66	1,482,231	9,362,063	4,404,181	236,850	1,225,652	2,941,679	4,957,882	1,286,296	2,417,660	1,253,926
Rhode Island	3	108,767	122,256	70,364	.....	.....	70,364	51,892	20,629	15,369	15,894
All other states (a)	5	14,360	534,426	276,826	41,000	78,716	157,110	257,600	33,251	161,969	62,380

STATES.	MISCELLANEOUS EXPENSES.							AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES.				
	Total.	Rent paid for tenancy.	Taxes.	Insurance.	Repairs, ordinary, of buildings and machinery.	Interest paid on cash used in the business.	Sundries not elsewhere reported.	Aggregate.		Officers, firm members, and clerks.		
								Average number.	Total wages.	Males above 16 years.	Females above 15 years.	Wages.
The United States	$4,259,623	$734,268	$156,444	$220,849	$552,818	$661,663	$1,933,581	50 913	$19,680,318	1,396	135	$1,917,877
California	10,438	7,246	397	1,251	661	210	673	214	83,566	7	4	15,276
Connecticut	270,426	21,630	19,799	19,841	73,438	39,763	95,935	5,081	2,006,804	109	8	159,273
Illinois	35,761	17,035	1,885	6,511	5,245	85	5,000	805	295,636	41	8	54,314
Maryland	3,798	2,435	237	211	85	730	100	75	24,233	3	.....	3,600
Massachusetts	484,390	35,838	21,889	12,908	23,676	91,989	298,090	3,216	1,296,399	215	8	258,115
New Jersey	1,356,137	182,148	67,807	67,264	170,074	252,621	616,223	17,917	7,176,180	411	61	541,570
New York	1,123,671	359,777	19,815	63,177	88,594	171,422	420,886	13,151	5,584,399	401	31	601,336
Ohio	2,662	780	595	327	260	.....	700	40	13,685	2	2	2,512
Pennsylvania	939,051	98,089	22,502	46,588	184,449	97,319	490,104	9,522	2,981,334	184	8	256,049
Rhode Island	17,427	7,940	114	629	1,392	1,482	5,870	194	61,978	6	2	8,507
All other states	15,862	1,350	1,404	2,142	4,944	6,022	.....	698	156,104	17	3	17,325

a Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Maine, 1; Michigan, 1; Missouri, 1; North Carolina, 1; Virginia, 1.

TABLE 5.—DETAILED STATEMENT FOR THE UNITED STATES, BY STATES: 1890—Continued.

STATES.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES—continued.								MACHINERY.							
	Operatives and skilled. (a)				Unskilled.				Number of spindles.			Number of looms.				
												Hand.		Power.		
	Males above 16 years.	Females above 15 years.	Children.	Wages.	Males above 16 years.	Females above 15 years.	Children.	Wages.	Winding, cleaning, and doubling.	Spinning and twisting.	Braiding.	For broad goods.	For narrow goods.	For broad goods.	For ribbons.	For other narrow goods.
The United States.	16,718	28,702	2,773	$17,290,315	884	212	93	$472,126	369,035	718,360	107,403	413	1,334	14,866	4,389	1,567
California	41	139	2	64,548	8	13	.....	3,742	799	2,018	29	.....	35	.....	1	.....
Connecticut	1,331	3,186	123	1,716,659	209	115	.....	130,872	45,402	84,262	11,492	6	.....	1,053	290	29
Illinois	154	589	10	239,624	3	.....	.....	1,698	363	369	221	.....	82	.....	.....	44
Maryland	27	44	.....	20,568	1	.....	.....	65	6	.....	.....	.....	.....	.....	14	.....
Massachusetts	892	1,927	56	993,400	85	1	32	44,884	26,235	55,200	30,403	41	55	354	.....	90
New Jersey	7,460	8,763	894	6,481,155	313	10	5	153,455	135,160	224,204	19,366	218	19	9,146	2,112	229
New York	4,396	7,920	264	4,993,590	150	63	16	79,473	62,197	92,772	72,635	80	972	1,838	1,478	572
Ohio	8	28	.....	11,173	.....	.....	.....	.....	96	.....	.....	8	8	.....	.....	.....
Pennsylvania	2,318	5,607	1,254	2,671,333	102	10	39	53,952	89,429	228,786	30,217	60	163	2,306	451	603
Rhode Island	46	107	29	52,357	3	.....	1	1,114	930	2,463	40	.....	.....	.....	43	.....
All other states	135	392	141	135,908	10	.....	.....	2,871	8,418	28,286	3,000	.....	.....	169	.....	.....

STATES.	MACHINERY—continued.				MATERIALS USED.									
	Number of machines.				Total cost.	Raw silk.		Waste silk.		Organzine and tram.		Other silk materials.	
	Jacquard.	Knitting.	Lace.	Sewing.		Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.
The United States.	5,905	245	78	1,032	$51,004,425	6,376,881	$26,087,371	1,357,618	$1,106,608	3,305,372	$16,518,979	744,223	$2,638,242
California	3	5	1	3	146,406	20,575	71,012	200	500	3,718	31,326	3,071	20,568
Connecticut	230	1	.....	16	6,201,876	1,142,802	4,560,968	648,823	515,738	113,978	584,442	15,527	62,180
Illinois	6	10	.....	3	314,855	5,225	23,500	.....	.....	7,095	34,776	21,798	97,655
Maryland	.....	.....	.....	.....	34,305	.....	.....	.....	.....	4,645	27,705	350	1,825
Massachusetts	42	68	.....	11	3,251,893	558,493	2,128,772	191,909	155,494	97,278	485,995	23,608	91,436
New Jersey	4,195	1	3	187	17,908,883	1,845,242	7,691,253	61,420	56,523	1,858,517	9,093,692	97,793	350,377
New York	846	139	74	712	10,174,818	715,003	3,117,515	59,598	57,003	912,782	4,680,369	159,138	716,394
Ohio	.....	.....	.....	.....	13,983	.....	.....	.....	.....	920	7,473	112	862
Pennsylvania	540	20	.....	100	12,094,389	1,932,396	7,843,624	310,668	250,457	287,159	1,484,599	422,826	1,296,945
Rhode Island	43	1	.....	.....	149,763	.....	.....	73,000	58,413	19,280	88,602	.....	.....
All other states	.....	.....	.....	.....	713,254	157,145	650,727	12,000	12,480	.....	.....	.....	.....

STATES.	MATERIALS USED—continued.												
	Other textile materials.		Oil.		Soap.		Chemicals and dyestuffs.	Fuel.				Rent of power and heat.	All other materials.
								Total cost.	Coal.	Wood.	Other fuel.		
	Pounds.	Cost.	Gallons.	Cost.	Pounds.	Cost.	Cost.		Cost.	Cost.	Cost.	Cost.	Cost.
The United States.	5,624,960	$2,327,684	76,348	$32,514	2,340,098	$126,065	$558,532	$400,107	$372,916	$11,353	$15,838	$85,409	$1,122,914
California	16,920	13,303	94	59	2,900	249	150	102	30	.....	72	1,734	7,403
Connecticut	118,474	78,485	6,977	3,173	589,827	31,055	170,636	73,134	68,382	3,260	1,492	3,400	118,665
Illinois	274,135	111,978	182	107	400	20	4,000	1,725	1,485	.....	240	1,740	38,754
Maryland	7,800	2,799	20	6	.....	.....	.....	205	205	.....	.....	.....	1,765
Massachusetts	212,357	156,120	3,430	1,104	333,724	17,847	51,025	48,149	41,524	6,575	50	870	115,081
New Jersey	314,050	228,811	25,103	10,666	682,315	32,994	111,990	143,132	143,128	.....	4	33,453	155,992
New York	2,176,847	936,248	10,354	4,611	220,554	13,042	100,082	63,990	50,945	65	12,989	33,739	451,825
Ohio	7,975	5,488	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	160
Pennsylvania	2,495,909	794,350	29,223	12,429	297,744	16,906	108,012	63,502	62,372	130	1,000	9,473	214,092
Rhode Island	.....	.....	.....	.....	16,650	998	.....	.....	.....	.....	.....	1,000	750
All other states	493	102	965	359	195,984	12,954	12,037	6,168	4,845	1,323	.....	.....	18,427

a Includes pieceworkers and their wages.

TABLE 5.—DETAILED STATEMENT FOR THE UNITED STATES, BY STATES: 1890—Continued.

STATES.	VALUE OF PRODUCTS.							
	Total.	Organzine and tram.	Spun silk yarn.	Machine twist and sewing silk.	Fringe knitting, embroidery, and floss silk.	Dress goods, figured and plain.	Other broad goods.	Tapestries, curtains, and other upholstery broad goods.
The United States	$87,298,454	$16,889,366	$1,263,489	$7,068,213	$1,849,631	$15,183,134	$9,000,418	$3,712,332
California	271,912	5,600	.....	81,590	24,840	.....	.....	.....
Connecticut	9,788,951	1,356,854	308,536	3,820,463	704,945	1,099,284	1,384,619	62,163
Illinois	785,845	.....	.....	.....	.....	.....	.....	2,000
Maryland	100,361	.....	.....	.....	.....	.....	.....	.....
Massachusetts	5,557,569	688,359	257,251	2,216,213	499,131	.....	784,719	.....
New Jersey	30,760,371	5,265,389	89,000	102,750	119,956	9,297,792	3,517,343	572,842
New York	19,417,796	1,474,841	206,640	254,000	21,259	2,592,508	679,356	665,604
Ohio	33,927	.....	.....	.....	.....	.....	.....	.....
Pennsylvania	19,357,546	7,645,323	308,000	446,197	389,500	1,940,836	2,634,381	2,409,723
Rhode Island	229,062	.....	94,062	.....	.....	.....	.....	.....
All other states	995,114	444,000	.....	147,900	90,000	252,714	.....	.....

STATES.	VALUE OF PRODUCTS—continued.						
	Gimps and trimmings.	Handkerchiefs.	Ribbons and laces.	Braids and bindings.	Dress, cloak, and military trimmings.	Hosiery and knit goods.	All other products.
The United States	$3,918,209	$1,913,224	$17,343,197	$2,771,382	$4,636,357	$1,156,172	$602,330
California	120,360	.....	.....	6,000	23,840	7,346	2,336
Connecticut	112,319	31,300	736,642	139,216	.....	15,125	17,485
Illinois	465,500	.....	.....	65,000	228,745	23,900	700
Maryland	24,000	.....	70,361	.....	6,000	.....	.....
Massachusetts	127,000	.....	.....	660,938	160,000	135,958	28,000
New Jersey	185,949	1,872,559	9,229,387	359,902	54,000	79,212	14,290
New York	1,984,531	9,365	6,031,576	1,154,326	3,199,709	872,800	271,281
Ohio	8,767	.....	.....	.....	25,160	.....	.....
Pennsylvania	880,783	.....	1,195,231	293,000	938,903	21,831	244,838
Rhode Island	.....	.....	80,000	55,000	.....	.....	.....
All other states	.....	.....	.....	38,000	.....	.....	23,400

TABLE 6.—CLASSIFICATION OF EMPLOYÉS AND WAGES FOR THE UNITED STATES, BY STATES: 1890.

STATES	Number of establishments.	AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS. (a)												
		Aggregates.		Officers or firm members actively engaged in the industry or in supervision.								Clerks.			
				Males above 16 years.				Females above 15 years.				Males above 16 years.			
		Average number.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.
The United States	472	50,913	$19,680,318	644	49	$36.37	$1,137,043	21	48	$17.80	$17,836	752	49	$19.39	$715,192
California	9	214	83,566	6	50	36.73	11,020	1	50	30.00	1,500	1	44	35.66	1,560
Connecticut	35	5,081	2,006,804	48	50	36.66	87,800	.....	.....	.....	.....	61	50	22.33	68,095
Illinois	10	805	295,636	19	48	31.92	29,060	.....	.....	.....	.....	22	47	20.51	21,324
Maryland	4	75	24,233	3	50	24.00	3,600	.....	.....	.....	.....	.....	.....	.....	.....
Massachusetts	20	3,216	1,296,399	44	49	46.28	99,950	1	46	21.82	1,000	171	50	18.13	153,665
New Jersey	132	17,917	7,176,180	201	49	33.57	330,814	3	50	20.00	3,000	210	49	18.55	189,828
New York	185	13,151	5,584,399	220	49	36.82	394,758	13	47	14.99	9,120	181	49	20.65	184,454
Ohio	3	40	13,685	1	50	20.00	1,000	.....	.....	.....	.....	1	50	12.00	600
Pennsylvania	66	9,522	2,981,334	88	46	40.17	163,066	3	49	21.74	3,216	96	48	18.97	87,677
Rhode Island	3	194	61,978	6	49	26.31	7,675	.....	.....	.....	.....	.....	.....	.....	.....
All other states (b)	5	698	156,104	8	46	22.45	8,300	.....	.....	.....	.....	9	49	18.26	7,989

STATES.	AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS—continued.											
	Clerks—Continued.				Operatives and skilled.							
	Females above 15 years.				Males above 16 years.				Females above 15 years.			
	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.
The United States	114	48	$8.71	$47,806	10,594	49	$11.35	$5,847,457	19,695	48	$5.73	$5,475,613
California	3	46	8.70	1,196	39	47	13.12	24,266	137	48	5.67	37,318
Connecticut	8	50	8.45	3,378	986	50	12.03	592,705	2,499	50	5.60	700,109
Illinois	8	43	11.50	3,930	136	44	11.88	70,522	535	46	5.88	143,392
Maryland	.....	.....	.....	.....	27	50	8.96	11,980	44	50	3.93	8,588
Massachusetts	7	50	10.00	3,500	808	50	9.97	399,194	1,549	49	5.54	424,363
New Jersey	58	49	6.27	17,928	3,697	48	11.36	2,016,165	5,951	47	6.39	1,798,259
New York	18	47	15.41	13,004	2,965	49	12.80	1,865,914	4,825	49	5.88	1,398,208
Ohio	2	47	9.73	912	8	47	9.68	3,649	28	48	5.64	7,524
Pennsylvania	5	47	8.96	2,090	1,777	48	9.23	792,477	3,767	48	4.93	898,188
Rhode Island	2	46	9.08	832	41	50	9.84	20,006	54	48	5.13	13,427
All other states	3	47	7.31	1,036	110	49	9.42	50,579	306	48	3.16	46,237

a The average weekly earnings per employé are computed from individual reports. The average number of employés reported by each establishment is multiplied by the number of weeks embraced by the term of operation; the result is the number of weeks required for one employé to perform the labor. Aggregating such results of individual reports the number of weeks required for one employé to perform the labor is obtained. This number used as a divisor for the total wages produces the true average weekly earnings.

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Maine, 1; Michigan, 1; Missouri, 1; North Carolina, 1; Virginia, 1.

TABLE 6.—CLASSIFICATION OF EMPLOYÉS AND WAGES FOR THE UNITED STATES, BY STATES: 1890—Continued.

AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS—continued.

STATES.	Operatives and skilled—Continued. Children. Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Unskilled. Males above 16 years. Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Females above 15 years. Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.
The United States.	2,573	49	$3.09	$390,029	884	49	$9.38	$406,657	212	48	$4.70	$48,177
California	2	50	4.70	470	8	17	10.50	1,454	13	27	6.64	2,288
Connecticut	123	50	3.91	24,076	209	50	10.20	106,575	115	50	4.23	24,297
Illinois	10	48	3.26	1,560	3	49	11.48	1,698	...	...	...	...
Maryland	...	...	...	...	1	10	6.25	65	...	...	...	...
Massachusetts	48	49	4.31	10,075	85	50	8.75	37,064	1	44	6.86	300
New Jersey	858	49	3.07	128,973	313	49	9.73	149,663	10	50	6.37	3,186
New York	249	49	3.10	37,500	150	49	8.22	60,877	63	49	4.99	15,562
Ohio	...	...	...	...	...	...	...	...	...	...	...	...
Pennsylvania	1,124	49	3.10	171,220	102	48	9.22	45,432	10	48	5.32	2,544
Rhode Island	18	50	3.11	2,796	3	49	6.57	958	...	...	...	...
All other states	141	49	1.95	13,359	10	50	5.74	2,871	...	...	...	...

AVERAGE NUMBER OF EMPLOYÉS IN EACH CLASS AND AVERAGE WEEKLY EARNINGS—continued.

PIECEWORKERS—AVERAGE NUMBER EMPLOYED AND TOTAL WAGES.

STATES.	Unskilled—Continued. Children. Number.	Average number of weeks employed.	Average weekly earnings per employé.	Total wages.	Summary. Number.	Wages.	Males above 16 years. Number.	Wages.	Females above 15 years. Number.	Wages.	Children. Number.	Wages.
The United States.	93	49	$3.78	$17,292	15,331	$5,577,216	6,124	$3,095,417	9,007	$2,446,275	200	$35,524
California	...	...	...	...	4	2,494	2	1,870	2	624	...	...
Connecticut	...	...	...	...	1,032	399,769	345	197,740	687	202,029	...	...
Illinois	...	...	...	...	72	24,150	18	10,110	54	14,040	...	...
Maryland	...	...	...	...	...	...	...	...	...	...	...	...
Massachusetts	32	50	4.70	7,520	470	159,768	84	49,155	378	109,038	8	1,575
New Jersey	5	50	2.42	606	6,611	2,537,758	3,763	1,663,655	2,812	862,160	36	11,943
New York	16	50	3.79	3,034	4,451	1,601,968	1,341	846,287	3,095	753,806	15	1,875
Ohio	...	...	...	...	...	...	...	...	...	...	...	...
Pennsylvania	39	48	3.19	5,976	2,511	809,448	541	317,327	1,840	474,300	130	17,821
Rhode Island	1	46	3.40	156	69	16,128	5	1,434	53	12,384	11	2,310
All other states	...	...	...	...	111	25,733	25	7,839	86	17,894	...	...

TABLE 7.—AVERAGE NUMBER OF EMPLOYÉS AT THE DIFFERENT RATES OF PAY, FOR THE UNITED STATES, BY STATES: 1890.

STATES.	Number of establishments.	WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, NOT INCLUDING THOSE EMPLOYED ON PIECEWORK. (a)										
		Aggregates.		Males above 16 years.								
		Average number.	Total wages.	Total number.	Under $5.	$5 and over but under $6.	$6 and over but under $7.	$7 and over but under $8.	$8 and over but under $9.	$9 and over but under $10.	$10 and over but under $12.	$12 and over but under $15.
The United States.	472	50,913	$19,680,318	12,874	1,308	473	870	669	688	1,342	1,593	2,175
California	9	214	83,566	54	3	4	.....	4	.....	.....	12	8
Connecticut	35	5,081	2,006,804	1,304	44	49	87	113	64	281	153	192
Illinois	10	805	295,636	180	16	.....	2	.....	.....	32	36	27
Maryland	4	75	24,233	31	1	7	10	1	.....	.....	.....	10
Massachusetts	20	3,216	1,296,399	1,108	63	80	136	82	35	110	66	252
New Jersey	132	17,917	7,176,180	4,421	268	177	317	270	257	512	679	737
New York	185	13,151	5,584,399	3,516	353	111	138	89	214	160	453	605
Ohio	3	40	13,685	10	3	.....	.....	.....	.....	.....	3	2
Pennsylvania	66	9,522	2,981,334	2,063	539	41	143	80	100	247	172	316
Rhode Island	3	194	61,978	50	6	.....	14	7	.....	.....	2	10
All other states (b)	5	698	156,104	137	12	4	23	23	18	.....	17	16

STATES.	WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK—continued.										
	Males above 16 years—Continued.			Females above 15 years.							
	$15 and over but under $20.	$20 and over but under $25.	$25 and over.	Total number.	Under $5.	$5 and over but under $6.	$6 and over but under $7.	$7 and over but under $8.	$8 and over but under $9.	$9 and over but under $10.	$10 and over but under $12.	$12 and over but under $15.
The United States.	2,151	688	917	20,042	6,523	5,072	4,376	1,371	995	485	885	263
California	13	3	7	154	26	63	29	16	8	7	4	.....
Connecticut	166	57	98	2,622	529	948	975	75	29	45	7	9
Illinois	29	25	13	543	116	186	175	4	54	1	6	.....
Maryland	.....	.....	2	44	39	.....	5	.....	.....	.....	.....	.....
Massachusetts	175	62	47	1,558	364	682	300	95	22	30	13	51
New Jersey	677	274	253	6,022	1,370	1,520	1,487	505	284	254	483	102
New York	846	175	372	4,919	1,493	1,109	951	455	544	122	102	95
Ohio	1	1	.....	30	10	2	15	2	.....	.....	.....	1
Pennsylvania	233	78	114	3,785	2,280	531	407	212	53	24	269	4
Rhode Island	3	3	5	56	25	24	.....	5	.....	2	.....	.....
All other states	8	10	6	309	271	1	32	2	1	.....	1	1

STATES.	WEEKLY RATES OF WAGES PAID AND AVERAGE NUMBER OF EMPLOYÉS AT EACH RATE, INCLUDING OFFICERS, FIRM MEMBERS, AND CLERKS, BUT NOT THOSE EMPLOYED ON PIECEWORK—continued.								PIECEWORKERS.	
	Females above 15 years—Continued.			Children.						
	$15 and over but under $20.	$20 and over but under $25.	$25 and over.	Total number.	Under $5.	$5 and over but under $6.	$6 and over but under $7.	$7 and over but under $8.	$8 and over but under $9.	Average number.	Total wages.
The United States.	37	21	14	2,666	2,561	105	.....	.....	.....	15,331	$5,577,216
California	.....	.....	1	2	1	1	.....	.....	.....	4	2,494
Connecticut	1	2	2	123	121	2	.....	.....	.....	1,032	399,769
Illinois	.....	.....	1	10	10	.....	.....	.....	.....	72	24,150
Maryland	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Massachusetts	.....	1	.....	80	67	13	.....	.....	.....	470	159,768
New Jersey	5	5	1	863	801	62	.....	.....	.....	6,611	2,537,758
New York	30	11	7	265	260	5	.....	.....	.....	4,451	1,601,968
Ohio	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pennsylvania	1	2	2	1,163	1,141	22	.....	.....	.....	2,511	809,448
Rhode Island	.....	.....	.....	19	19	.....	.....	.....	.....	69	16,128
All other states	.....	.....	.....	141	141	.....	.....	.....	.....	111	25,733

a In comparing the table of weekly rates and the number of employés at each rate with the average weekly earnings presented in Table 6 it must be remembered that it is not practicable to obtain true average weekly earnings from the table of weekly rates, because the term of employment varies for employés at the respective rates.

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Maine, 1; Michigan, 1; Missouri, 1; North Carolina, 1; Virginia, 1.

DYEING AND FINISHING TEXTILES.

BY P. T. WOOD.

The dyeing and finishing of textiles are integral parts of the manufacture of textile fabrics.

The tables exhibited in this report do not embrace the statistics of establishments connected with cotton woolen, or silk factories, but show only the operations of independent dye works, bleacheries, and print works, the value of the products reported being merely the values added to the fabrics by the processes of dyeing and finishing. Much of the dyeing and finishing is done by the manufacturers themselves, the data showing that while chemicals and dyestuffs to the value of $8,407,693 were consumed during the census year in the establishments devoted exclusively to this industry, the silk, cotton, and woolen mills in which dyeing and finishing is done used chemicals and dyestuffs valued at $11,278,970, divided as follows: in woolen mills, $6,453,665; in cotton mills, $4,266,773, and in silk mills, $558,532. It will thus be seen that more dyeing and finishing was done in textile mills than in the 248 establishments devoted exclusively to this industry.

While there was an increase in all the expenses in the census year over those reported at the census of 1880, the returns show that the value of the work done in the dyehouses, bleacheries, and print works has decreased. Thus, while there were 248 establishments engaged in this industry in 1890 and 191 in 1880, an increase of 29.84 per cent, the value of the work done during the census year (1890) was $28,900,560, as compared with $32,297,420 in 1880, a decrease of $3,396,860, or 10.52 per cent. This decrease is all the more marked because of the increase in the products of the silk, cotton, and woolen mills during the decade. At the same time a marked increase is shown in the amount paid for wages, a slight difference in cost of materials, and an apparently large increase in the amount of capital invested. The capital employed (not including $1,819,779 value of property hired) in the industry of dyeing and finishing textiles for 1890 was $38,450,800, an apparent but not an actual increase of $12,226,819 over that employed as reported at the census of 1880. The large increase shown in this item is partly due to the fact that invested capital as returned at the census of 1880 did not take cognizance of all the items that are properly embraced by "Live assets", which, it is believed, were for the first time fully reported at the census of 1890. Hence, in making comparison between the returns of capital invested at the two censuses, these facts should be carefully borne in mind.

Dyers and finishers explain that the decrease in value of the work done as reported for 1890 is due to the fact that competition and improved processes have reduced their charges for work at least 25 per cent. The market cost of chemicals and dyestuffs remains about the same, but it is not necessary to use as much of these articles now in a given quantity of goods as was employed at the census of 1880. This is particularly noticeable in the manufactures of silk, as by the introduction of machinery operated by power it is now possible to do work that ten years ago could only be performed by hand. Therefore the decrease in the value of work done is not due to an increase in the number of manufacturers of textiles doing their own dyeing and finishing, since the proportion of such manufacturers in 1890 is about the same as in 1880.

Notwithstanding the decrease in amount received for work done in the dyehouses an average increase is shown in the wages paid. In 1880 there were 16,698 employés, receiving $6,474,364 in wages, while 20,267 employés earned $9,717,011 in wages during the census year ended May 31, 1890. The percentage of increase in the number of employés is 21.37 and in wages paid 50.08.

At the census of 1880 the cost of materials and wages was $20,138,659 as compared with a product of $32,297,420, while at the census of 1890 the cost of these two principal items was $22,102,231 and value of product $28,900,560. Thus materials and wages cost 62.35 per cent of the value of work done in the former census year, while at the latter census the percentage had risen to 76.48.

The work done, both in quantity and value, is principally in dyeing, bleaching, and printing cotton yarns and piece goods.

The amount of $28,900,560, given as value of product of dyehouses, bleacheries, and print works, does not show the full value added to textile manufactures by these processes. In the woolen mills chemicals and dyestuffs costing $6,453,665 were used. From the returns made by manufacturers it is found that the cost of these materials is 36.18 per cent of the added value. Applying this basis of computation, it would appear that the added value of work done in woolen mills is $17,837,659. Chemicals and dyestuffs costing $4,266,773 were used in cotton mills. The cost of these chemicals and dyestuffs, according to the returns of establishments dyeing, printing, and bleaching cotton goods, is 26.61 per cent of the value added by these processes, which would make the value of the work done $16,034,472. In silk mills the chemicals and dyestuffs cost 37.21 per cent of the value added by their use. The cost of these materials is $558,532, and the value of the work done, which means the cost of the dyestuffs plus the value added by their use, is $1,501,027. The value of this work done in mills engaged in textile manufactures is therefore approximately as follows: cotton, $16,034,472; woolen, $17,837,659; silk, $1,501,027; total, $35,373,158. Adding this total to the value of work done in establishments devoted exclusively to dyeing and finishing textiles, the gross value added by dyeing, bleaching, and printing is shown to be $64,273,718.

Table 1 shows by states, with totals for the United States, the number of establishments, amount of capital, miscellaneous expenses, number of employés by classes and their wages, power, cost of materials used, total value of work done, and classes of goods operated upon.

TABLE 1.—DYEING AND FINISHING TEXTILES, IN THE AGGREGATE, SHOWING CAPITAL INVESTED, MISCELLANEOUS EXPENSES, EMPLOYÉS, WAGES, POWER, MATERIALS, AND WORK DONE.

STATES.	Number of establishments.	CAPITAL.								
		Value of hired property.	Direct investment.							
			Aggregate.	Value of plant.			Live assets.			
				Total.	Land.	Buildings.	Machinery, tools, and implements.	Total.	Raw materials.	Stock in process and finished products on hand.	Cash, bills and accounts receivable, and all sundries not elsewhere reported.
The United States.	248	$1,819,779	$38,450,800	$19,879,039	$2,579,114	$7,596,641	$9,703,284	$18,571,761	$3,586,358	$7,213,281	$7,772,122
Connecticut	5	.....	775,352	621,096	58,700	331,184	231,212	154,256	61,864	4,300	88,092
Illinois	3	13,000	26,500	20,500	3,500	6,000	11,000	6,000	2,000	1,000	3,000
Massachusetts	33	139,500	11,996,154	5,187,513	673,931	2,010,687	2,502,895	6,808,641	717,428	2,773,877	3,317,336
New Jersey	41	306,300	5,197,403	2,996,209	333,936	879,577	1,782,696	2,201,194	442,430	713,993	1,044,771
New York	49	516,866	4,963,095	2,225,566	366,300	721,700	1,137,566	2,737,529	1,148,419	1,358,789	230,321
Pennsylvania	83	247,625	6,296,340	3,791,968	598,647	1,354,200	1,839,121	2,504,372	372,193	918,148	1,214,031
Rhode Island	22	578,788	5,739,692	3,763,321	432,600	1,832,398	1,498,322	1,976,371	491,809	621,048	863,514
All other states (a)	12	17,700	3,456,264	1,272,866	111,500	460,895	700,471	2,183,398	350,215	822,126	1,011,057

STATES.	MISCELLANEOUS EXPENSES.							AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES,				
								Aggregates.		Officers, firm members, and clerks.		
	Total.	Rent paid for tenancy.	Taxes.	Insurance.	Repairs, ordinary, of buildings and machinery.	Interest paid on cash used in the business.	Sundries not elsewhere reported.	Average number.	Total wages.	Males above 16 years.	Females above 15 years.	Wages.
The United States.	$3,131,081	$168,646	$214,464	$158,996	$866,211	$697,503	$1,025,261	20,267	$9,717,011	636	36	$805,291
Connecticut	77,336	.....	7,618	2,443	35,851	5,785	25,639	489	251,352	12	.....	14,250
Illinois	1,426	920	61	120	125	.....	200	21	10,424	4	1	2,532
Massachusetts	869,669	23,530	82,524	32,675	251,799	250,013	229,128	4,352	1,909,107	78	4	99,320
New Jersey	752,461	38,267	23,507	23,471	145,834	136,041	385,341	3,864	2,057,562	129	.....	179,425
New York	367,935	42,270	22,947	28,630	95,045	133,667	45,376	2,839	1,481,723	112	2	137,473
Pennsylvania	419,456	45,343	21,742	37,357	134,325	30,176	150,513	3,545	1,803,822	184	6	207,257
Rhode Island	393,549	17,206	27,982	24,213	113,746	87,761	122,641	3,720	1,593,055	88	13	130,059
All other states	249,249	1,110	28,083	10,087	89,486	54,060	66,423	1,437	609,966	29	4	34,975

a Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Delaware, 1; Iowa, 1; Maine, 1; Maryland, 2; Minnesota, 1; Missouri, 1; New Hampshire, 2; Ohio, 2; West Virginia, 1.

TABLE 1.—DYEING AND FINISHING TEXTILES, IN THE AGGREGATE, ETC.—Continued.

STATES.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES—continued.								POWER.								
	Operatives and skilled. (a)				Unskilled.				Steam.			Water.				All other power.		Printing machines.
	Males above 16 years.	Females above 15 years.	Children.	Wages.	Males above 16 years.	Females above 15 years.	Children.	Wages.	Boilers.	Engines.	Horse power.	Water wheels.		Turbine wheels.		Motors.	Horse power.	
												Number.	Horse power.	Number.	Horse power.			
The United States.	14,697	2,178	711	$8,186,947	1,813	120	82	$724,773	927	1,011	54,370	11	630	30	2,397	4	45.5	287
Connecticut	368	72	2	223,064	22	13	.....	14,038	14	13	725	5	350	4	111	.....	.....	4
Illinois	12	3	.....	7,392	1	.....	.....	500	3	3	57	.....	.....	.....	.....	.....	.....	.....
Massachusetts	3,164	516	197	1,668,627	363	23	7	141,160	202	132	11,533	3	160	7	663	1	5.0	77
New Jersey	2,976	346	35	1,744,466	359	.....	19	133,671	139	199	7,005	1	20	3	335	1	10.0	56
New York	1,973	390	121	1,250,774	201	25	15	93,476	156	186	12,545	.....	.....	5	225	.....	.....	70
Pennsylvania	2,590	211	164	1,446,157	374	1	15	150,408	226	259	8,663	1	70	.....	.....	.....	.....	17
Rhode Island	2,518	513	119	1,308,696	386	57	26	154,300	135	182	10,535	1	30	4	258	.....	.....	44
All other states	1,096	127	73	537,771	107	1	.....	37,220	52	37	3,307	.....	.....	7	805	2	30.5	19

STATES.	MATERIALS USED.									WORK DONE.		
	Total cost.	Chemicals and dyestuffs.	Starch.		Soap.		Fuel.	Rent of power and heat.	All other materials.	Total value of work done.	Woolen yarns dyed.	
		Cost.	Pounds.	Cost.	Pounds.	Cost.	Cost.	Cost.	Cost.		Pounds.	Value.
The United States.	$12,385,220	$8,407,693	18,649,606	$660,577	6,766,696	$279,272	$1,647,848	$23,138	$1,366,692	$28,900,560	17,999,651	$751,801
Connecticut	300,360	114,126	556,763	17,815	32,318	2,049	58,711	.....	107,659	715,388	.....	.....
Illinois	6,846	4,270	.....	.....	8,200	504	1,072	.....	1,000	26,741	1,031	206
Massachusetts	2,801,364	1,950,550	4,538,183	125,288	753,860	25,599	404,778	6,413	288,736	6,496,215	102,400	9,800
New Jersey	2,711,121	2,068,192	3,184,240	109,466	1,730,738	83,775	239,329	2,500	207,859	6,183,397	138,926	6,043
New York	1,454,119	889,577	2,242,012	73,836	995,683	44,321	216,618	4,775	224,992	3,636,051	459,700	69,352
Pennsylvania	2,395,482	1,808,041	3,517,503	107,269	2,160,788	80,793	284,546	6,250	108,583	5,240,761	b17,216,404	660,657
Rhode Island	1,819,351	1,064,475	3,138,601	129,050	809,774	32,205	351,521	1,200	240,900	4,743,561	29,190	2,543
All other states	896,577	508,462	1,472,304	97,853	275,335	10,026	91,273	2,000	186,963	1,858,446	52,000	3,200

WORK DONE—continued.

STATES.	Worsted yarns dyed.		Cotton yarns dyed.		Spun silk yarns dyed.		Thrown silk dyed.		Wool stock dyed.		Cotton stock dyed.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
The United States.	9,342,157	$493,974	48,762,759	$2,036,127	311,830	$119,810	3,322,017	$2,346,387	1,160,666	$48,828	4,676,344	$204,827
Connecticut	.....	.....	110,000	11,500	.....	.....	15,600	15,600	.....	.....	165,000	5,400
Illinois	30,000	3,000	81,720	7,535	10,000	5,000	.....	.....	.....	.....	.....	.....
Massachusetts	500,000	42,500	5,172,909	242,356	.....	.....	.....	.....	280,000	5,600	32,000	4,650
New Jersey	10,615	1,331	1,486,400	27,140	8,400	5,000	2,866,937	2,120,318	75,399	5,770	848,466	28,079
New York	62,000	28,162	871,100	76,368	180,200	85,520	272,815	125,571	125,000	4,500	230,000	7,200
Pennsylvania	8,498,342	398,935	33,499,727	1,346,942	111,730	23,090	166,665	84,898	587,267	25,008	1,525,528	47,446
Rhode Island	241,000	20,030	6,522,037	291,161	1,500	1,200	.....	.....	90,000	7,200	1,875,000	112,000
All other states	200	16	1,018,866	33,125	.....	.....	.....	.....	3,000	750	350	52

a Includes pieceworkers and their wages.

b Includes 407,000 pounds woolens and worsteds.

TABLE 1.—DYEING AND FINISHING TEXTILES, IN THE AGGREGATE, ETC.—Continued.

STATES.	WORK DONE—continued.												
	Wool and worsted piece goods dyed.		Cotton piece goods dyed.		Cotton piece goods bleached.		Cotton piece goods printed.		Silk piece goods dyed.		Mixed textile piece goods dyed.		All other work done.
	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Square yards.	Value.	Value.
The United States	20,779,034	$652,998	446,496,822	$5,671,488	454,357,758	$3,369,940	579,667,368	$10,355,032	7,405,399	$394,777	60,716,250	$2,069,765	$384,806
Connecticut	.....	.....	22,398,076	340,201	33,126,636	242,504	4,358,016	68,192	.....	.....	.....	.....	31,991
Illinois	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11,000
Massachusetts	7,685,654	92,853	113,430,837	1,388,927	118,891,995	640,375	184,198,408	3,997,087	60,000	6,000	50,000	5,000	61,067
New Jersey	.....	.....	87,748,170	976,956	25,980,644	216,365	94,862,907	1,625,617	4,705,012	116,378	19,790,000	1,029,400	25,000
New York	1,250,150	25,022	30,177,807	399,593	21,316,000	195,762	94,622,693	1,508,307	2,516,787	269,839	14,295,150	691,015	149,849
Pennsylvania	10,793,880	496,509	93,056,440	1,359,002	*a*8,760,980	175,000	24,187,753	268,206	120,100	1,210	24,167,900	267,225	86,633
Rhode Island	1,002,550	34,964	50,727,100	734,522	192,163,959	1,440,921	140,054,180	2,004,890	.....	.....	2,409,200	75,805	18,325
All other states	46,800	3,650	48,958,392	472,287	54,117,544	459,013	37,383,411	882,733	3,500	1,350	4,000	1,320	950

a Dyed, bleached, and printed.

Table 2 shows by states, with totals for the United States, the returns of establishments engaged in dyeing and finishing woolen and worsted, cotton, silk, and mixed goods and yarns, respectively.

TABLE 2.—DYEING AND FINISHING TEXTILES, BY CLASSES OF TEXTILES, SHOWING CAPITAL INVESTED, MISCELLANEOUS EXPENSES, EMPLOYÉS, WAGES, POWER, MATERIALS, AND WORK DONE.

WOOLEN AND WORSTED GOODS AND YARNS.

STATES.	Number of establishments.	CAPITAL.		Miscellaneous expenses.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES. (*a*)				
		Value of hired property.	Direct investment.		Aggregates.		Males above 16 years.	Females above 15 years.	Children.
					Average number.	Total wages.			
The United States	39	$228,700	$2,770,837	$152,628	1,543	$1,046,304	1,482	58	3
Massachusetts	3	.....	65,500	3,171	29	15,550	27	2	.....
New Jersey	3	.....	475,667	39,999	340	297,337	338	2	.....
New York	5	96,000	357,550	45,507	322	278,008	322	.....	.....
Pennsylvania	24	113,500	1,157,706	60,914	819	436,541	765	52	2
All other states (*b*)	4	19,200	14,414	3,037	33	18,868	30	2	1

STATES.	POWER.			Printing machines.	COST OF MATERIALS USED.					Total value of work done.
	Steam.	Water.	All other.		Total.	Chemicals and dyestuffs.	Fuel.	Rent of power and heat.	All other materials.	
	Horse power.	Horse power.	Horse power.							
The United States	3,794	103	.....	41	$1,238,507	$1,009,537	$132,215	$1,280	$95,475	$2,790,405
Massachusetts	154	18	.....	.....	11,268	5,875	2,700	.....	2,693	41,252
New Jersey	1,183	85	.....	20	332,039	277,759	30,600	.....	23,680	771,665
New York	1,065	.....	.....	21	290,590	247,360	29,880	.....	13,350	662,425
Pennsylvania	1,357	.....	.....	.....	586,637	463,665	66,615	1,280	55,077	1,261,163
All other states	35	.....	.....	.....	17,973	14,878	2,420	.....	675	53,900

a Includes officers, firm members, and clerks.

b Includes states grouped, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Rhode Island, 3; Missouri, 1.

TABLE 2.—DYEING AND FINISHING TEXTILES, BY CLASSES OF TEXTILES, ETC.—Continued.

COTTON GOODS AND YARNS.

STATES.	Number of establishments.	CAPITAL.		Miscellaneous expenses.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES. (a)				
		Value of hired property.	Direct investment.		Aggregates.		Males above 16 years.	Females above 15 years.	Children.
					Average number.	Total wages.			
The United States	113	$971,646	$29,164,503	$2,453,329	14,491	$6,440,408	11,894	1,844	753
Connecticut	4	.....	771,652	76,686	483	248,752	396	85	2
Massachusetts	24	133,500	8,868,857	706,604	3,279	1,413,333	2,750	342	187
New Jersey	13	112,500	3,178,430	575,755	2,079	938,166	1,740	287	52
New York	16	50,733	3,959,235	261,064	1,958	874,975	1,472	352	134
Pennsylvania	31	106,125	3,786,021	226,197	1,814	885,952	1,539	102	173
Rhode Island	17	560,788	5,161,676	359,964	3,460	1,480,684	2,784	544	132
All other states (b)	8	8,000	3,438,632	247,059	1,418	598,546	1,213	132	73

STATES.	POWER.			Printing machines.	COST OF MATERIALS USED.					Total value of work done.
	Steam.	Water.	All other.		Total.	Chemicals and dyestuffs.	Fuel.	Rent of power and heat.	All other materials.	
	Horse power.	Horse power.	Horse power.							
The United States	44,708	2,863	35.5	212	$8,363,016	$5,289,783	$1,187,035	$16,083	$1,870,115	$19,876,364
Connecticut	715	440	.....	4	294,120	109,126	58,111	.....	126,883	699,788
Massachusetts	10,454	765	5.0	49	2,195,959	1,573,749	305,671	6,413	310,126	5,264,241
New Jersey	4,845	270	.....	36	1,185,616	752,476	126,147	1,900	305,093	2,878,016
New York	10,654	225	.....	43	953,055	489,263	168,483	300	295,009	2,262,412
Pennsylvania	5,631	70	.....	17	1,230,828	927,971	134,973	4,270	163,614	2,621,107
Rhode Island	9,120	288	.....	44	1,617,197	937,826	303,223	1,200	374,948	4,320,707
All other states	3,289	805	30.5	19	886,241	499,372	90,427	2,000	294,442	1,830,093

SILK GOODS AND YARNS.

STATES.	Number of establishments.	CAPITAL.		Miscellaneous expenses.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES. (a)				
		Value of hired property.	Direct investment.		Aggregates.		Males above 16 years.	Females above 15 years.	Children.
					Average number.	Total wages.			
The United States	52	$487,933	$1,880,224	$177,933	1,745	$1,013,325	1,639	102	4
New Jersey	24	193,800	1,313,306	123,607	1,292	744,059	1,233	57	2
New York	21	285,133	466,505	47,706	391	230,034	344	45	2
All other states (b)	7	9,000	100,413	6,620	62	39,232	62	.....	.....

STATES.	POWER.			Printing machines.	COST OF MATERIALS USED.					Total value of work done.
	Steam.	Water.	All other.		Total.	Chemicals and dyestuffs.	Fuel.	Rent of power and heat.	All other materials.	
	Horse power.	Horse power.	Horse power.							
The United States	1,513	21	10.0	.....	$1,276,926	$1,092,192	$83,475	$4,675	$96,584	$2,935,101
New Jersey	777	.....	10.0	.....	1,127,346	987,957	70,582	600	68,207	2,333,716
New York	545	.....	.....	.....	111,129	75,012	9,498	4,075	22,544	478,637
All other states	191	21	.....	.....	38,451	29,223	3,395	.....	5,833	122,748

a Includes officers, firm members, and clerks.

b Includes states grouped, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Cotton—Delaware, 1; Iowa, 1; Maine, 1; Maryland, 1; New Hampshire, 2; Ohio, 1; West Virginia, 1. Silk—Pennsylvania, 5; Illinois, 1; Connecticut, 1.

TABLE 2.—DYEING AND FINISHING TEXTILES, BY CLASSES OF TEXTILES, ETC.—Continued.

MIXED GOODS AND YARNS.

STATES.	CAPITAL.			Miscellaneous expenses.	AVERAGE NUMBER OF EMPLOYÉS AND TOTAL WAGES. (a)				
	Number of establishments.	Value of hired property.	Direct investment.		Aggregates.		Males above 16 years.	Females above 15 years.	Children.
					Average number.	Total wages.			
The United States	44	$131,500	$5,335,236	$347,191	2,488	$1,216,974	2,131	324	33
Massachusetts	6	6,000	3,061,797	159,894	1,044	480,224	828	199	17
New York	7	85,000	179,805	13,658	168	98,706	148	20	.....
Pennsylvania	23	25,000	1,260,900	126,700	862	446,425	794	64	4
All other states (b)	8	15,500	832,734	46,939	414	191,619	361	41	12

STATES.	POWER.			Printing machines.	COST OF MATERIALS USED.					Total value of work done.
	Steam.	Water.	All other.		Total.	Chemicals and dyestuffs.	Fuel.	Rent of power and heat.	All other materials.	
	Horse power.	Horse power.	Horse power.							
The United States	4,355	40	.....	34	$1,506,771	$1,016,181	$245,123	$1,100	$244,367	$3,298,690
Massachusetts	925	40	.....	28	594,137	370,926	96,407	.....	126,804	1,190,722
New York	281	.....	.....	6	99,345	77,942	8,757	400	12,246	232,577
Pennsylvania	1,529	.....	.....	.....	547,406	393,182	80,343	700	73,181	1,255,343
All other states	1,620	.....	.....	.....	265,883	174,131	59,616	.....	32,136	620,048

a Includes officers, firm members, and clerks.

b Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Illinois, 2; Maryland, 1; Minnesota, 1; New Jersey, 1; Ohio, 1; Rhode Island, 2.